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# JOINT CHINOOK TECHNICAL COMMITTEE

## 2014 Exploitation Rate Analysis and Model Calibration
## **Volume One**

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*Note*: Product names used in this publication are included for completeness but do not constitute product endorsement.

## LIST OF ACRONYMS

| | |
|---|---|
| AABM | Aggregate Abundance Based Management |
| AI | Abundance Index |
| ADF&G | Alaska Department of Fish & Game |
| AEQ | Adult Equivalent |
| AWG | Analytical Working Group of the CTC |
| BY | Brood Year |
| BYER | Brood Year Exploitation Rate |
| DFO | Department of Fisheries and Oceans Canada |
| CLB | Calibration |
| CNR | Chinook Nonretention |
| CRITFC | Columbia River Intertribal Fish Commission |
| CTC | Chinook Technical Committee |
| CWTIP | Coded Wire Tag Improvement Program |
| CWTIT | Coded Wire Tag Improvement Team |
| CY | Calendar Year |
| CWT | Coded Wire Tag |
| DIT | Double Index Tag |
| ERA | Exploitation Rate Analysis |
| FI | Fishery Index |
| EV | Environmental Variable scalar |
| FNC | First Nations Caucus |
| IM | Incidental Mortality |
| LC | Landed Catch |
| ISBM | Individual Stock Based Management |
| MM | Mass marked |
| MSF | Mark-Selective Fishery |
| NA | Not Available |
| NBC | Northern BC Dixon Entrance to Kitimat including Haida Gwaii |
| NMFS | National Marine Fisheries Service |
| NWIFC | Northwest Indian Fisheries Commission |
| ODFW | Oregon Department of Fish & Wildlife |
| PSC | Pacific Salmon Commission |
| PST | Pacific Salmon Treaty |
| QIN | Quinault Nation |
| ROM | Ratio of Means |
| SEAK | Southeast Alaska Cape Suckling to Dixon Entrance |
| SPS | South Puget Sound |
| SPFI | Stratified Proportional Fishery Index |
| UAF | University of Alaska Fairbanks |
| USFWS | US Fish & Wildlife Service |
| WA/OR | Ocean areas off Washington and Oregon North of Cape Falcon |
| WCVI | West Coast Vancouver Island excluding Area 20 |
| WDFW | Washington Department of Fish and Wildlife |

# EXECUTIVE SUMMARY

The Pacific Salmon Treaty (PST) requires the Chinook Technical Committee (CTC) to report annual catches, harvest rate indices, estimates of incidental mortality (IM) and exploitation rates for all Chinook salmon fisheries and stocks harvested within the Treaty area. The CTC provides an annual report to the Pacific Salmon Commission (PSC) to fulfill this obligation as agreed by Canada and the US under Chapter 3 of the Treaty. This report contains four sections: description of procedures and a review of the results from the annual Exploitation Rate Analysis (ERA) based on coded wire tag (CWT) data, description of the calibration procedure and results from the calibration of the PSC Coastwide Chinook Model, an evaluation of mark-selective fisheries (MSFs), and a review of program improvements to the coastwide CWT program. Additionally, this report contains the results of the annual exploitation rate assessment of CWT data through 2012 (US stocks) and 2013 (Canadian stocks), the preseason PSC Chinook Model calibration results for 2014 (CLB 1402), postseason PSC Chinook Model calibration results through 2013 (CLB 1402), and the CWT Improvement program results from 2013 and planned projects for 2014. Results include the abundance indices (AIs) for the aggregate abundance-based management (AABM) fisheries and individual stock based management (ISBM) indices for each country.

## AABM Abundance Indices and Associated Catches

The pre- and postseason AIs for the three AABM fisheries, Southeast Alaska (SEAK), Northern British Columbia (NBC), and West Coast Vancouver Island (WCVI) are presented in Table 1. The 2009 PST Agreement specifies that the AABM fisheries are to be managed through the use of the AIs. Each model calibration provides the postseason AIs for the previous year and the preseason AIs for the current year. Preseason AIs are used to estimate the total allowable catch limits in the upcoming fishing season. Catch overages and underages are tracked by the AIs, and associated allowable catches are calculated by the first CTC-accepted postseason model calibration for a fishing year, per PST subparagraph 11(a)(i).

The 2009 PST Agreement specifies an allowable catch associated with each AI for each AABM fishery. The maximum allowable treaty catch (total catch minus any hatchery add-on and exclusion catch) by fishery and year and the observed treaty catches are shown in Table 2.

*Table 1* *Abundance Indices for 2009–2013 for the SEAK, NBC, and WCVI AABM fisheries. Postseason values for each year are from the first postseason calibration following the fishing year.*

| | SEAK | | NBC | | WCVI | |
|---|---|---|---|---|---|---|
| Year | Preseason | Postseason | Preseason | Postseason | Preseason | Postseason |
| 2009 | 1.33 | 1.20 | 1.10 | 1.07 | 0.72 | 0.61 |
| 2010 | 1.35 | 1.31 | 1.17 | 1.23 | 0.96 | 0.95 |
| 2011 | 1.69 | 1.62 | 1.38 | 1.41 | 1.15 | 0.90 |
| 2012 | 1.52 | 1.24[1] | 1.32 | 1.15[1] | 0.89 | 0.76[1] |
| 2013 | 1.20[1] | 1.63 | 1.10[1] | 1.51 | 0.77[1] | 1.04 |
| 2014 | 2.57 | | 1.99 | | 1.20 | |

[1] Due to changes in calibration procedures (reviewed in section 3.1.4), 2012 postseason (CLB 1309) and 2013 preseason (CLB 1308) AIs are based on different calibrations; the procedures and assumptions CLB 1309 mirror those used during the 2012 preseason calibration.

*Table 2* *Preseason allowable catches for 2009–2014, and postseason allowable catches and observed catches for 2009–2013 for AABM fisheries. Postseason values for each year are from the first postseason calibration following the fishing year.*

| PST Treaty Allowable and Observed Catches | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | SEAK (T, N, S)[1] | | | NBC (T, S) | | | WCVI (T, S) | | |
| Year | Preseason Allowable Catch | Postseason Allowable Catch | Observed Catch | Preseason Allowable Catch | Postseason Allowable Catch | Observed Catch | Preseason Allowable Catch | Postseason Allowable Catch | Observed Catch |
| 2009 | 218,800 | 176,000 | 227,533 | 143,000 | 139,100 | 109,470 | 107,800 | 91,300 | 124,617 |
| 2010 | 221,800 | 215,800 | 230,250 | 152,100 | 160,400 | 136,613 | 143,700 | 142,300 | 139,047 |
| 2011 | 294,800 | 283,300 | 290,297 | 182,400 | 186,800 | 122,660 | 196,800 | 134,800 | 204,232 |
| 2012 | 266,800 | 205,100 | 242,034 | 173,600 | 149,500 | 120,307 | 133,300 | 113,800 | 134,468 |
| 2013 | 176,000 | 284,900 | 183,891 | 143,000 | 220,300 | 115,914 | 115,300 | 178,000 | 113,598 |
| 2014 | 439,400 | | | 290,300 | | | 205,400 | | |

[1] T = troll, N = net, and S = sport.

[2] Values changed because the method used to partition gillnet catch into large and nonlarge fish has changed. This change affects the computation of the terminal exclusion, add-on, and treaty catch.

Table 3 shows the differences between the postseason allowable catches and the observed treaty catches in AABM fisheries for 2009–2013, and the cumulative deviation for those years. In SEAK, the 2013 catch was 35.5% below the postseason allowable catch, and the cumulative cross-year difference is 0.8% above. In NBC, the 2013 catch was 19.5% below the postseason allowable catch and the cumulative difference is 29.3% below. In WCVI, the 2013 catch was 36.2% below the postseason allowable catch and the cumulative difference is 8.4% above the postseason allowable catch. The AABM fisheries have exceeded the preseason allowable catch 4 (SEAK), 0 (NBC), and 3 (WCVI) times in the 2009–2013 period.

*Table 3* *Deviations in numbers of Chinook salmon caught and percentages from allowable catches derived from the postseason AI (Table 2) for PST AABM fisheries in 2009–2013. Postseason values for each year are from the first postseason calibration following the fishing year.*

| | SEAK | | NBC | | WCVI | |
|---|---|---|---|---|---|---|
| Year | Number of Fish | Percent Difference | Number of Fish | Percent Difference | Number of Fish | Percent Difference |
| 2009 | 51,533 | 29.3% | −29,630 | −21.3% | 33,317 | 36.5% |
| 2010 | 14,450 | 6.7% | −23,787 | −14.8% | −3,253 | −2.3% |
| 2011 | 6,997 | 2.5% | −64,140 | −34.3% | 69,432 | 51.5% |
| 2012 | 36,934 | 18.0% | −29,193 | −19.5% | 20,668 | 18.2% |
| 2013 | −101,009 | −35.5% | −104,386 | −47.4% | −64,402 | −36.2% |
| **Cum.** | **8,905** | **0.8%** | **−251,136** | **−29.3%** | **55,762** | **8.4%** |

Overages and underages in AABM catches, relative to the first postseason calibration for a fishing year (Table 3), can arise due to the inseason management system, errors in the preseason calibration process (e.g., forecast error), or a combination of the two. The relative influence of each was evaluated by inspecting differences in actual landed catch and allowable catches from both preseason and postseason calibrations (Table 4). Regarding the inseason management system in 2013, actual landed catch was greater than preseason allowable catch by 7,891 Chinook salmon in SEAK, fewer than preseason allowable catch by 27,086 in NBC, and fewer than preseason allowable catch by 1,702 in WCVI. In terms of the postseason allowable catches for evaluation of the provisions of the PST (subparagraph 11(a)(i)), actual catches were less than the postseason allowable catches by 101,009 Chinook salmon in SEAK, 104,386 in NBC, and by 64,402 in WCVI.

*Table 4* *Deviations in actual landed catch (LC), allowable landed catch determined from preseason model calibration (PreALC), and allowable landed catch determined from postseason model calibration (PostALC) for AABM fisheries, 1999–2013.*

*Note*: Postseason values for each year are from the first postseason calibration following the fishing year. The difference between LC and PreALC represents the consequences of the management system employed in the year; the difference in PreALC and PostALC represents consequences of the forecast procedures and data used in forecasting the PreALC by the PSC Chinook Model. The difference in LC and PostALC captures the effects of both processes.

| Year | SEAK | | | NBC | | | WCVI | | |
|---|---|---|---|---|---|---|---|---|---|
| | LC–PreALC | PreALC–PostALC | LC–PostALC | LC–PreALC | PreALC–PostALC | LC–PostALC | LC–PreALC | PreALC–PostALC | LC–PostALC |
| 2009 | 8,733 | 42,800 | 51,533 | –33,530 | 3,900 | –29,630 | 16,817 | 16,500 | 33,317 |
| 2010 | 8,450 | 6,000 | 14,450 | –15,487 | –8,300 | –23,787 | –4,653 | 1,400 | –3,253 |
| 2011 | –4,503 | 11,500 | 6,997 | –59,740 | –4,400 | –64,140 | 7,432 | 62,000 | 69,432 |
| 2012 | –24,766 | 61,700 | 36,934 | –53,293 | 24,100 | –29,193 | 1,168 | 19,500 | 20,668 |
| 2013 | 7,891 | –108,900 | –101,009 | –27,086 | –77,300 | –104,386 | –1,702 | –62,700 | –64,402 |

### ISBM Indices

For ISBM fisheries, Paragraph 8 of the Chinook Chapter of the 2009 PST Agreement specifies that Canada and the US will reduce base period exploitation rates on specified stocks by 36.5% (Canada) and 40% (US), equivalent to ISBM indices of 63.5% (Canada) and 60% (US). This requirement is referred to as the *general obligation* and does not apply to stocks that achieve their CTC-agreed escapement goal. The 2009 PST Agreement also specifies that for those stocks in which the general obligation is insufficient to meet the escapement goal, the Party in whose waters the stock originates shall further constrain its fisheries to an extent that is not greater than the average ISBM exploitation rate which occurred in the years 1991 to 1996 (Paragraph 8 (c)). This requirement is referred to as the *additional obligation*.

### Postseason ISBM Indices for 2012 and 2013

For 2012, six of the seven Canadian ISBM indices that could be calculated from CWT data were reduced more than required under the Agreement (Table 5). Only the ISBM index for the WCVI stock group exceeded the general obligation (0.635). Since there is no CTC-accepted escapement goal for this stock aggregate, the general obligation applies. For 2013, the four Canadian ISBM indices that could be calculated from CWT data were reduced more than required under the Agreement (Table 3.11).

*Table 5* *ISBM indices based on 2012 and 2014 PSC Chinook Model, 2012 CWT analysis, and the 2014 indices predicted from the 2014 PSC Chinook Model, for the stock groups applicable to all BC ISBM fisheries as listed in Attachment IV of the Treaty.*

| **Stock Group** | **Escapement Indicator Stock** | **2012 Model Indices for 2012** | **2014 Model Indices for 2012** | **CWT Indices for 2012** | **2014 Model Indices for 2014** |
|---|---|---|---|---|---|
| Lower Strait of Georgia | Cowichan[1] | 0.443[2] | 0.379[2] | 0.262[3] | 0.307[2] |
| | Nanaimo[4] | | | NA[4,5] | |
| Fraser Late | Harrison River[1] | 0.256 | 0.239 | 0.141[6] | 0.252 |
| North Puget Sound Natural Springs | Nooksack | 0.339 | 0.214 | 0.137 | 0.197 |
| | Skagit | 0.340 | 0.214 | NA | 0.197 |
| Upper Strait of Georgia | Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish | 0.596 | 0.126 | 0.175 | 0.598 |
| Fraser Early (spring and summers) | Upper Fraser, Mid Fraser, Thompson | 0.226 | 0.095 | NA | 0.213 |
| West Coast Vancouver Island Falls | WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble) | 0.636 | 0.706 | 1.017 | 0.639 |
| Puget Sound Natural Summer/Falls | Skagit | 1.421 | 0.172 | NA | 0.368 |
| | Stillaguamish | 1.329 | 0.293 | 0.158 | 0.462 |
| | Snohomish | 1.359 | 0.171 | NA | 0.367 |
| | Lake Washington | 0.991 | 0.246 | NA | 0.337 |
| | Green River | 1.000 | 0.246 | 0.346 | 0.337 |
| North/Central BC | Yakoun, Nass, Skeena, Area 8 | 0.536 | 0.131 | NA | 0.502 |

[1] Stock or stock group with a CTC-agreed escapement goal.

[2] Although model-based indices were previously calculated separately for Cowichan and Nanaimo, these did not adequately represent impacts on either Lower Strait of Georgia stock because the model-based data represent an aggregate of the two stocks and methods do not currently exist to correctly disaggregate these data for calculation of the ISBM values. Until such methods are developed, a single index value only will be reported representing the aggregate.

[3] An inconsistency was discovered between the approaches used to calculate the model-based and CWT-based indices. The former included harvest rates for terminal sport while the latter did not. Terminal sport harvest rates are now included in the calculation of both indices. Further review is required to determine whether the base period terminal sport harvest rates obtained from analyses of Big Qualicum CWT recoveries adequately represent impacts that would have occurred on Cowichan Chinook.

[4] Several problems have been identified in the approach previously used to calculate the CWT-based indices for Nanaimo Chinook. Until these problems are resolved, indices for this stock will not be reported.

[5] Not available because of insufficient data (lack of stock-specific tag codes, base period CWT recoveries, etc.).

[6] The terminal sport harvest rates for Chilliwack Hatchery Chinook, the indicator stock, were removed from the calculation for the Harrison River naturals because sport harvest has been essentially zero on the natural population.

Four of the 15 US ISBM indices that could be calculated from CWT data for 2012 were reduced more than required under the 2009 Agreement. Ten US CWT-based ISBM indices exceeded either the general obligation or the additional obligation (Table 6). All of these 10 stocks have CTC-accepted escapement goals and all met or exceeded their respective escapement goals, and thus are in compliance under the Treaty. Only the Nooksack spring ISBM index exceeded the general obligation (0.600). Since there is no CTC-accepted escapement goal for this stock aggregate, the general obligation applies.

### Preseason ISBM Indices for 2014

Of the 13 model-based ISBM indices for Canada, only the index for WCVI was predicted to marginally exceed the general obligation of 0.635 for Canadian ISBM fisheries in 2014 (Table 5). Since there is no CTC-accepted escapement goal for this stock aggregate, the general obligation would apply. The stocks with accepted escapement goals, Cowichan and Harrison, are expected to meet the obligations specified in Paragraph 8 of the Chinook Chapter.

Of the 20 model-based ISBM indices for US, 9 are predicted to be above the general obligation of 0.600 or the additional obligation (Table 6). All of the corresponding US stocks are expected to meet their CTC-agreed escapement goals.

*Table 6* *ISBM indices based on 2012 and 2014 PSC Chinook Model, 2012 CWT analysis, and the 2014 indices predicted from the 2014 PSC Chinook Model, for the stock groups applicable to all Southern US fisheries as listed in Attachment V of the Treaty.*

| Stock Group | Escapement Indicator Stock | 2012 Model Indices for 2012 | 2014 Model Indices for 2012 | CWT Indices for 2012 | 2014 Model Indices for 2014 |
|---|---|---|---|---|---|
| Washington Coastal Fall Naturals | Hoko | 0.378 | 0.520 | NA [1] | 0.395 |
| | Grays Harbor [2] | 0.604 | 0.494 | 0.591 | 0.477 |
| | Queets [2] | 0.179 | 0.954 | 0.951 | 0.227 |
| | Hoh [2] | 0.443 | 1.230 | 1.593 | 1.251 |
| | Quillayute [2] | 1.151 | 1.700 | 2.140 | 1.149 |
| Columbia River Falls | Upriver Brights [2] | 0.894 | 1.022 | 3.133 | 0.914 |
| | Deschutes [2] | 0.684 | 0.680 | 1.045 | 0.696 |
| | Lewis [2] | 0.442 | 0.816 | 0.895 | 0.527 |
| Puget Sound Natural Summer/Falls | Skagit | 0.327 | NC [3] | NA | 0.718 |
| | Stillaguamish | 1.054 | NC | 0.213 | 0.131 |
| | Snohomish | 0.332 | NC | NA | 0.192 |
| | Lake Washington | 0.590 | NC | NA | 0.466 |
| | Green R | 0.631 | NC | 0.544 | 0.251 |
| Fraser Late | Harrison River [2] | 0.448 | 0.671 | 0.405 | 0.528 |
| Columbia River Summers | Mid-Columbia Summers [2] | 1.369 | 1.551 | 5.192 | 1.463 |
| Far North Migrating OR Coastal Falls | Nehalem [2] | 1.696 | 1.457 | 2.267 | 1.436 |
| | Siletz [2] | 0.814 | 0.669 | 0.997 | 0.717 |
| | Siuslaw [2] | 1.646 | 1.294 | 1.603 | 1.393 |
| North Puget Sound Natural Springs | Nooksack | 0.171 | NC | 2.758 | 0.274 |
| | Skagit | 0.147 | NC | NA | 0.357 |

[1] Not available because of insufficient data (lack of stock-specific tag codes, base period CWT recoveries, etc.).

[2] Stock with a CTC-agreed escapement goal.

[3] Not able to calculate (NC). Computation of ISBM Indices for Puget Sound stocks depends on output from the Fishery Regulation Assessment Model, which produces only one-year projections and does not run retrospectively.

## Coded Wire Tag Program Improvement Activities

A summary of the Coded Wire Tag Improvement Program (CWTIP) for 2013 is presented in Chapter 5. The goal of the CWTIP is to improve CWT-based estimates used for management of Chinook salmon stocks in the geographic area covered by the PST. The 2013 season represents the fifth year of the program for Canada and the third year of the program for the US The Chapter 5 summary includes, over the years of the program to date, a summary of spending, performance and benefits of the CWTIP, as well as emerging and long-term issues facing the coastwide CWT program.

In 2013, the Commission approved $1.5 million in US funding and $1.5 million in Canadian funding for projects in each country. Summaries for individual projects are provided in Appendix L. Canadian projects included increased tagging for 12 CWT indicator stocks; increased escapement sampling for six stocks; program elements necessary for support of the Atnarko indicator stock in the Central BC fishing area; a substantial investment in upgrading the CWT reporting system; and improvements in sport and First Nations sampling and recovery rates, coordination and infrastructure (see Appendix Table L1). US-funded projects included tagging and sampling for three CWT indicator stocks (the Stikine, Chilkat, and Elk river stocks); CWT processing equipment for Alaska; CWT equipment (improved hand-held wands) for electronic sampling in Washington and Oregon; hand-held wands in SEAK to reduce costs of processing CWTs in commercial fisheries; estimation of CWTs in terminal sport fisheries in Puget Sound; and sampling of ocean troll and sport fisheries in Alaska, Washington, and Oregon (see Appendix Table L2).

# 1 INTRODUCTION

The Pacific Salmon Treaty (PST) requires the Chinook Technical Committee (CTC) to report annually on catches, harvest rate indices, estimates of incidental mortality (IM) and exploitation rates for all Chinook salmon fisheries and stocks harvested within the Treaty area. To fulfill this obligation, the CTC uses a PSC Chinook Model to generate key outputs of relevance to the Pacific Salmon Commission's (PSC) annual fishery management cycle. The model is calibrated each year, incorporating preseason stock-specific abundance forecasts with the latest information on catches, exploitation rates generated through cohort analysis, terminal runs, and escapements. The Parties rely upon the model to generate annual estimates of abundance for aggregate abundance-based management (AABM) fisheries and indices for individual stock based management (ISBM) fisheries (Figure 1.1).

Abundance index (AI) prediction is at the heart of the PST Chinook salmon management process, as preseason AIs determine the total allowable catches for each of the three AABM fisheries, Southeast Alaska (SEAK), Northern British Columbia (NBC), and West Coast Vancouver Island (WCVI). These preseason estimates of the total allowable catch drive the inseason management of AABM fisheries, because no reliable mechanism exists to update the AIs inseason. In addition to generating preseason AIs, the model provides other information of immediate relevance to PSC management, most notably postseason AIs and preseason ISBM indices. The first postseason AI estimates are used to determine the final total allowable catches to which the AABM fisheries are held accountable. The preseason ISBM indices are used to inform fishery management plans. Postseason ISBM indices are computed through a separate process using the CWT data that comes from the exploitation rate analysis (ERA), to which ISBM fisheries are held accountable.

This report describes the methods and results of the cohort analysis used to estimate exploitation rates from CWT data (Section 2), and the model calibration (Section 3). The results of the preseason model calibration for 2014 are based on the ERA using CWT data through catch year 2012 (2013 for Canadian stocks); coastwide data on catch, spawning escapements, and age structure through 2013; and forecasts of Chinook salmon returns expected in 2014. Additionally, this report includes reviews of recent Chinook-directed mark-selective fisheries (MSFs) (Section 4) and summarizes the activities associated with implementation of the coastwide Coded Wire Tag Improvement Program (CWTIP) prescribed under the 2009 PST Agreement (Section 5).

Of particular interest to PST implementation, this report includes, among other model outputs: (1) estimated postseason AIs for 1979 through 2013 and the preseason AI for 2014 for the AABM fisheries; (2) estimated ISBM indices, previously referred to as nonceiling indices, for 1999–2012 and modeled ISBM projections for the 2014 ISBM fisheries; (3) estimated stock composition for 1979–2013 and a projection for 2014 for the AABM and other fisheries; and (4) estimated fishery indices (harvest rates) for the AABM fisheries.

Appendix A shows the relationship between the exploitation rate indicator stocks, escapement indicator stocks, model stocks, and PST Annex stocks. Appendices B to I present additional output from the ERA and model calibration beyond the summaries presented in the main body of the report. Appendix B provides the time series of ISBM CWT indices and ISBM model indices from the final preseason calibration. Appendix C shows the percent distribution of total mortality by catch year for exploitation rate indicator stocks. Appendices D (AABM only, tables) and E (all fisheries, figures) show the model estimates of stock composition in AABM and other sport and troll fisheries. Appendix F lists the IM rates used in the PSC Chinook Model. Appendix G gives the time series of total AIs for the AABM fisheries, and Appendix H provides the AIs for each model stock for each AABM fishery. Appendix I presents the time series of CWT-based fishery exploitation rate indices by stock, age, and fishery. Appendix J provides a graphical summary of forecast error for PSC Chinook Model stocks. CWT data quality and model calibration issues, as well as their resolution, are detailed in Appendix K, and Appendix L contains narratives for projects that were funded by the CWTIP and active during fiscal year 2013.

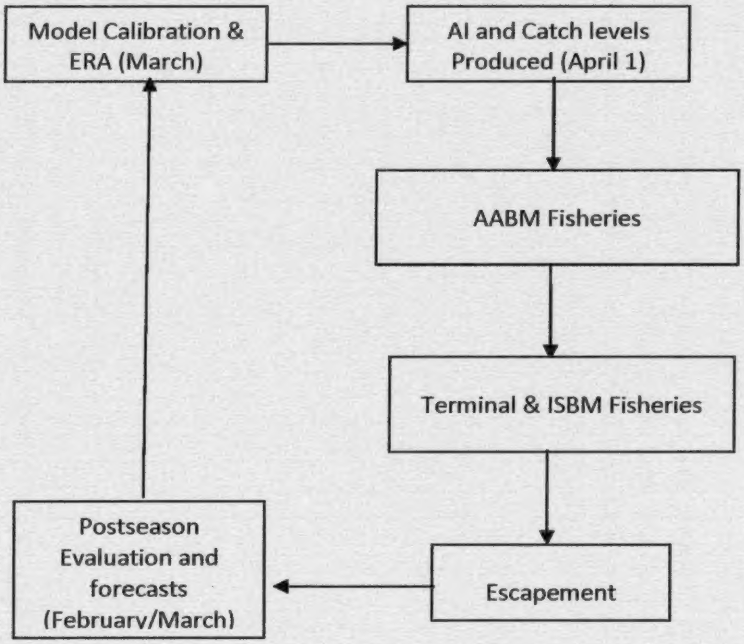
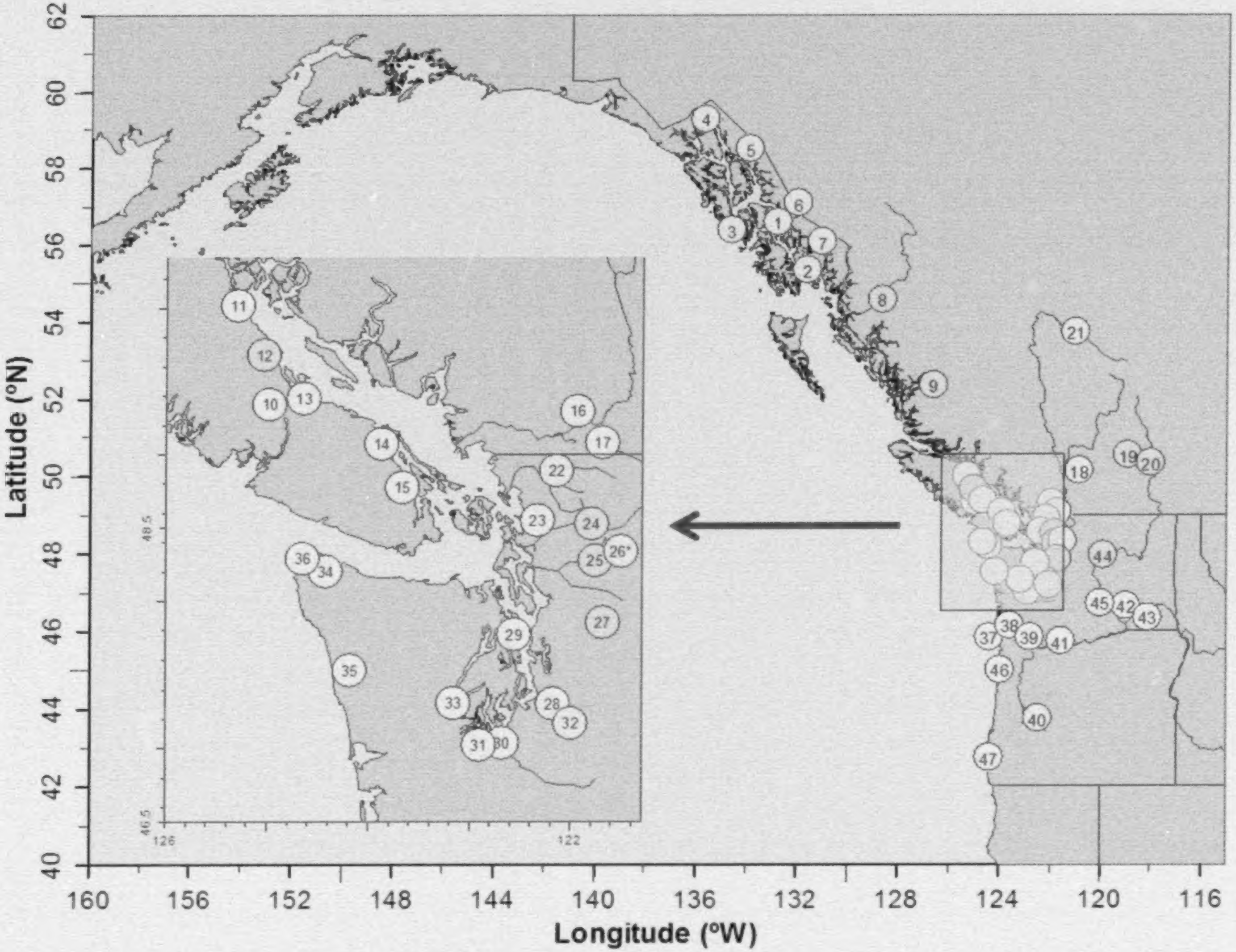

Model Calibration & ERA (March)
AI and Catch levels Produced (April 1)
AABM Fisheries
Terminal & ISBM Fisheries
Escapement
Postseason Evaluation and forecasts (February/March)

*Figure 1.1 PST Chinook management and fisheries process.*

# 2 EXPLOITATION RATE ANALYSIS

The CTC currently monitors 45 CWT exploitation rate indicator stocks (Figure 2.1; Table 2.1). The exploitation rate assessment is performed through cohort analysis, a procedure that reconstructs the cohort size and exploitation history of a given stock and brood year (BY) using CWT release and recovery data (CTC 1988). The analysis provides stock-specific estimates of BY total, age- and fishery-specific exploitation rates, maturation rates, age-2 or age-3 survival indices, annual distributions of fishery mortalities, fishery indices for AABM fisheries, and ISBM indices for ISBM fisheries (Table 2.2). Estimates of age- and fishery-specific exploitation and maturation rates from the cohort analysis are combined with data on catches, escapements, incidental mortalities, and stock enhancement to complete the annual calibration of the PSC Chinook Model.



Latitude (°N)
62
60
58
56
54
52
50
48
46
44
42
40
Longitude (°W)
160
156
152
148
144
140
136
132
128
124
120
116
1
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48.5
46.5
126
122

See following page for figure caption.

*Figure 2.1 Geographical location of all past and present Chinook salmon CWT indicator stocks.*

*Note*: See Table 2.1 for the full stock names associated with each abbreviation. Not all stock indicators listed above are current. Only indicator stocks run now are in Table 2.1.

*Note*: Color of the filled circles indicates adult run timing: yellow = spring, aquamarine = summer and white = fall. The southern BC and Puget Sound area, where concentration of the CWT indicators is greatest, is shown in expanded view. Numbered circles indicate the CWT indicators as follows:

*1 - AKS(ACI)*
*2 - AKS(ADM)*
*3 - AKS(ALP)*
*4 - CHK*
*5 - TAK*
*6 - STI*
*7 - UNU*
*8 - KLM/KLY*
*9 - ATN/ATS*
*10 - RBT*
*11 - QUI*
*12 - PPS*
*13 - BQR*
*14 - NAN*
*15 - COW*
*16 - HAR*
*17 - CHI*
*18 - NIC*
*19 - SHU*
*20 - MSH*
*21 - DOM*
*22 - NSF*
*23 - SAM*
*24 - SSF*
*25 - STL*
*26 - SKF (SKS/SKF)*
*27 - SKY*
*28 - SPS(GRN)*
*29 - SPS(GRO)*
*30 - NIS*
*31 - SPY*
*32 - WRY*
*33 - GAD*
*34 - HOK*
*35 - QUE*
*36 - SOO*
*37 - LRH*
*38 - CWF*
*39 - LRW*
*40 - WSH*
*41 - SPR*
*42 - HAN*
*43 - LYF*
*44 - SUM*
*45 - URB*
*46 - SRH*
*47 - ELK*

*Table 2.1 Current CWT exploitation rate indicator stocks, their location, run type, and smolt age.*

| Stock/Area | Exploitation Rate Indicator Stocks | Hatchery | Run Type | Smolt Age |
|---|---|---|---|---|
| Southeast Alaska | Alaska Spring (AKS) | Crystal Lake, Whitman Lake, Little Port Walter, Deer Mountain, Neets Bay | Spring | Age 1 |
| | Chilkat (CHK) | Wild | Spring | Age 1 |
| | Taku (TAK) | Wild | Spring | Age 1 |
| | Unuk (UNU) | Wild | Spring | Age 1 |
| North/Central BC | Atnarko (ATN) | Snootli | Summer | Age 0 |
| | Kitsumkalum (KLM) | Deep Creek | Summer | Age 1 |
| WCVI | Robertson Creek (RBT) | Robertson Creek | Fall | Age 0 |
| Strait of Georgia | Big Qualicum (BQR) | Big Qualicum | Fall | Age 0 |
| | Cowichan (COW) | Cowichan | Fall | Age 0 |
| | Nanaimo (NAN) | Nanaimo | Fall | Age 0 |
| | Puntledge (PPS) | Puntledge | Summer | Age 0 |
| | Quinsam (QUI) | Quinsam | Fall | Age 0 |
| Fraser River | Chilliwack (Harrison Stock)[1] (CHI) | Chilliwack | Fall | Age 0 |
| | Dome (DOM) | Penny Creek | Spring | Age 1 |
| | Harrison (HAR) | Chehalis | Fall | Age 0 |
| | Lower Shuswap (SHU) | Shuswap Falls | Summer | Age 0 |
| | Middle Shuswap (MSH) | Shuswap Falls | Summer | Age 0 |
| | Nicola (NIC) | Spius Creek | Spring | Age 1 |
| North Puget Sound | Nooksack Spring Fingerling (NKF) | Kendall Creek | Spring | Age 0 |
| | Nooksack Spring Yearling (NKS) | Kendall Creek | Spring | Age 1 |
| | Samish Fall Fingerling[1] (SAM) | Samish | Summer/Fall | Age 0 |
| | Skagit Spring Fingerling (SKF) | Marblemount | Spring | Age 0 |
| | Skagit Spring Yearling[1] (SKS) | Marblemount | Spring | Age 1 |
| | Skagit Summer Fingerling (SSF) | Marblemount | Summer | Age 0 |
| Central Puget Sound | Skykomish Sum. Fingerling[1] (SKY) | Wallace | Summer/Fall | Age 0 |
| | Stillaguamish Fall Fingerling (STL) | Stillaquamish Tribal | Summer/Fall | Age 0 |
| South Puget Sound | Nisqually Fall Fingerling[1] (NIS) | Clear Creek | Summer/Fall | Age 0 |
| | S. Puget Sound Fall Fingerling[1] (SPS) | Soos /Grovers/Issaquah creeks | Summer/Fall | Age 0 |
| | South Puget Sound Fall Yearling (SPY) | Tumwater Falls | Summer/Fall | Age 1 |
| | White River Spring Yearling[2] (WRY) | White River | Spring | Age 1 |
| Hood Canal | George Adams Fall Fingerling[1] (GAD) | George Adams | Summer/Fall | Age 0 |
| Juan de Fuca | Elwha Fall Fingerling (ELW) | Lower Elwha | Summer/Fall | Age 0 |
| North Washington Coast | Hoko Fall Fingerling (HOK) | Hoko Makah National Fish Hatchery | Fall | Age 0 |
| | Queets Fall Fingerling (QUE) | Wild broodstock, Salmon River (WA) | Fall | Age 0 |
| | Sooes[7] Fall Fingerling (SOO) | Makah National Fish Hatchery | Fall | Age 0 |
| Lower Columbia River | Columbia Lower River Hatchery[1] (LRH) | Big Creek | Fall Tule | Age 0 |
| | Cowlitz Tule (WA) (CWF) | Cowlitz | Fall Tule | Age 0 |
| | Lewis River Wild (LRW) | Wild | Fall Bright | Age 0 |
| | Spring Creek Tule (WA)[1] (SPR) | Spring Creek National Fish Hatchery | Fall Tule | Age 0 |
| | Willamette Spring[1] (WSH) | Willamette Hatchery | Spring | Age 1 |
| Upper Columbia River | Columbia Summers[3] (WA) (SUM) | Wells | Summer | Age 0/1 |
| | Columbia Upriver Bright (URB) | Priest Rapids | Fall Bright | Age 0 |
| | Hanford Wild (HAN) | Wild | Fall Bright | Age 0 |
| Snake River | Lyons Ferry[1,4] (LYY/LYF) | Lyons Ferry | Fall Bright | Age 0 |
| North Oregon Coast | Salmon (SRH) | Salmon | Fall | Age 0 |
| Mid Oregon Coast | Elk River (ELK) | Elk River | Fall | Age 0 |

[1] Double index tags (DIT) associated with this stock.

[2] No longer adipose fin clipped.

[3] Model base period tag groups are fingerlings, ERA tag groups are a combination of fingerlings and yearlings.

[4] Subyearlings have been CWT-tagged since BY 1986, except for BYs 1993–1997.

[5] Tagged releases for the Nanaimo Fall stock were discontinued after the 2004 brood.

[6] Hatchery production of the Dome Creek stock was discontinued after the 2002 brood.

[7] The name for the Sooes River and hatchery was changed to Tsoo-Yess in 2015. This will replace all occurrences of *Sooes* in future reports.

*Table 2.2 CWT exploitation rate indicator stocks used in the ERA and the data derived from them: fishery, ISBM and survival indices, brood year exploitation rates (BYER), and stock catch distribution (Dist) with quantitative escapement estimates (Esc) and tagging during base period years 1979–1982.*

| Exploitation Rate Indicator Stock | Fishery Index | ISBM Index | BYER[1] | Survival Index | Dist | Esc | Base Tagging |
|---|---|---|---|---|---|---|---|
| Alaska Spring (AKS) | Yes | — | Ocean | Yes | Yes | Yes | Yes |
| Chilkat (CHK) | — | — | Total | Yes | Yes | Yes | — |
| Taku (TAK) | — | — | Total | Yes | Yes | Yes | — |
| Unuk (UNU) | — | — | Total | Yes | Yes | Yes | — |
| Atnarko (ATN) | Yes | No | Total | Yes | Yes | Yes | Yes |
| Kitsumkalum (KLM) | — | — | Total | Yes | Yes | Yes | — |
| Robertson Creek (RBT) | Yes | Yes | Ocean | Yes | Yes | Yes | Yes |
| Big Qualicum (BQR) | Yes | Yes | Total | Yes | Yes | Yes | Yes |
| Cowichan (COW) | Yes | Yes | Total | Yes | Yes | Yes | — |
| Nanaimo (NAN) | — | Yes | Total | Yes | Yes | Yes | Yes |
| Puntledge (PPS) | Yes | — | Total | Yes | Yes | Yes | Yes |
| Quinsam (QUI) | Yes | Yes | Total | Yes | Yes | Yes | Yes |
| Chilliwack (Harrison Fall Stock) (CHI) | — | Yes | Total | Yes | Yes | Yes | — |
| Dome (DOM) | — | — | Total | Yes | Yes | Yes | — |
| Harrison (HAR) | — | — | Total | Yes | Yes | Yes | — |
| Lower Shuswap (SHU) | — | — | Total | Yes | Yes | Yes | Yes |
| Middle Shuswap (MSH) | — | — | Total | Yes | Yes | Yes | — |
| Nicola (NIC) | — | — | Total | Yes | Yes | Yes | — |
| Nooksack Spring Fingerling (NSF) | — | — | Ocean | Yes | Yes | Yes | Yes |
| Nooksack Spring Yearling (NKS) | — | Yes | Ocean | Yes | Yes | Yes[2] | — |
| Samish Fall Fingerling (SAM)[3] | Yes | — | Ocean | Yes | Yes | Yes[2] | Yes |
| Skagit Spring Fingerling (SKF) | — | — | Ocean | Yes | Yes | Yes | — |
| Skagit Spring Yearling (SKS) | — | — | Ocean | Yes | Yes | Yes[2] | — |
| Skagit Summer Fingerling (SSF) | — | — | Ocean | Yes | Yes | Yes | — |
| Skykomish Summer Fingerling (SKY) | — | — | Ocean | Yes | Yes | Yes | — |
| Stillaguamish Summer Fingerling (STL) | — | Yes | Ocean | Yes | Yes | Yes | — |
| Nisqually Fall Fingerling (NIS) | — | — | Ocean | Yes | Yes | Yes | Yes |
| South Puget Sound Fall Fing. (SPS) | Yes | Yes | Ocean | Yes | Yes | Yes[2] | Yes |
| South Puget Sound Fall Yearling (SPY)[3] | Yes | — | Ocean | Yes | Yes | Yes[2] | Yes |
| White River Spring Yearling (WRY) | — | — | Ocean | Yes | Yes | Yes[2] | Yes |
| George Adams Fall Fingerling (GAD) | Yes | —[3] | Ocean | Yes | Yes | Yes[2] | Yes |
| Elwha Fall Fingerling (ELW) | — | — | Ocean | Yes | Yes | — | — |
| Hoko Fall Fingerling (HOK) | — | — | Total | Yes | Yes | Yes | — |
| Queets Fall Fingerling (QUE) | — | Yes | Total | Yes | Yes | — | Yes |
| Tsoo-Yess Fall Fingerling (SOO) | — | — | Total | Yes | Yes | Yes | — |
| Columbia Lower River Hatchery (LRH)[3] | Yes | — | Total | Yes | Yes | Yes | Yes |
| Cowlitz Tule (CWF) | Yes | — | Ocean | Yes | Yes | Yes | Yes |
| Lewis River Wild (LRW) | Yes | Yes | Total | Yes | Yes | Yes | Yes |
| Spring Creek Tule (SPR)[3] | Yes | — | Total | Yes | Yes | Yes | Yes |
| Willamette Spring (WSH) | Yes | — | Ocean | Yes | Yes | Yes | Yes |
| Columbia Summers (SUM) | Yes | Yes | Total | Yes | Yes | Yes | Yes |
| Columbia Upriver Bright (URB) | Yes | Yes | Total | Yes | Yes | Yes | Yes |
| Hanford Wild (HAN) | — | — | Total | Yes | Yes | Yes | — |
| Lyons Ferry (LYF) | — | — | Total | Yes | Yes | Yes | — |
| Salmon River (SRH for NOC) | Yes | Yes | Ocean | Yes | Yes | Yes | Yes |
| Elk River (ELK for MOC) | Yes | Yes | Ocean | Yes | Yes | Yes | Yes |

[1] For stocks of hatchery origin and subject to terminal fisheries directed at harvesting surplus hatchery production, ocean fisheries do not include terminal net fisheries. Otherwise, total fishery includes terminal net fisheries.

[2] Only hatchery rack recoveries are included in escapement.

[3] Stock of hatchery origin not used to represent naturally spawning stock.

## 2.1 ERA METHODS

### 2.1.1 Assumptions of the CWT ERA Analyses

Assumptions for the cohort analysis and other procedures used in the ERA are summarized below. Detailed discussions of assumptions and model parameters have been reported previously (CTC 1988). Analytical results include estimates of fishery indices for AABM fisheries, the nonceiling index for ISBM fisheries, and maturation rates for some PSC Chinook Model stocks. Primary assumptions of the cohort analysis are listed below.

1. CWT recovery data are obtained in a consistent manner from year to year or can be adjusted to make them comparable. Many of the analyses rely upon indices that are computed as the ratio of a statistic in a particular year to the value associated with a base period. Use of ratios may reduce or eliminate the effect of data biases that are consistent from year to year.
2. For ocean age-2 and older fish, natural mortality varies by age but is constant across years. Natural mortality probabilities applied by age are: age 2, 40%; age 3, 30%; age 4, 20%; and age 5 and older 10% (i.e., after fishing mortality and maturation of the age 4 cohort, 10% of the remaining immature fish die due to natural causes before moving to the next age class and before the commencement of fishing the next year).
3. All stocks within a fishery have the same size distribution at age that is constant across years.
4. The spatial and temporal catch distribution of sublegal-size fish of a given age and stock is the same as that for legal-size fish of that stock and age.
5. IM rates per encounter are constant between years. The rates vary by fish size (legal or sublegal) and fishery, and are published by the CTC (1997) for troll and sport fisheries. The rates used in CLB 1402 are listed in Appendix F.
6. The procedures for estimating the mortality of CWT fish of legal size during periods of Chinook salmon nonretention (CNR) assume that for any year the stock distribution during CNR periods is the same as during legal catch retention periods. To account for this in Canadian fisheries, the number of legal encounters during the CNR fishery was adjusted by a selectivity factor. A factor of 0.34 was used for the WCVI and Strait of Georgia troll fisheries. This value was the average selectivity factor calculated from three years of observer data in the Alaska troll fishery. A factor of 0.20 was used in the North Central BC troll fishery. This factor corresponds to the proportion of fishing areas that remain open during nonretention periods. A selectivity factor was not required for the SEAK troll fishery since an independent estimate of legal and sublegal encounters has been provided annually.
7. Maturation rates for BYs in which all ages have not matured (incomplete broods) are equal to the average of completed BYs. Maturation rates are stock and age specific.
8. Recoveries of age-4 (age-5 for spring stocks) and older Chinook salmon in ocean net fisheries are assumed to be mature fish.

9. When using the fishery indices as a measure of change in fishery harvest rates between years, the temporal and spatial distribution of stocks in and among fisheries and years is assumed to be stable.
10. CWT recoveries used in the ERA are from adipose-clipped tagged fish. There is no adjustment to the estimate of mortality in the ERA on adipose-intact fish that must be released in fisheries under adipose-clipped mark-selective regulations.

An exploitation rate indicator stock is not used in the ERA in the following instances.

1. The number of CWT recoveries is limited, i.e., a minimum of 10 estimated recoveries for a given brood stock–age combination).
2. There are no CWT recoveries in the spawning escapement.
3. There are fewer than four BYs with CWT recoveries.

Indicator stocks used for ERA and the type of analysis performed are shown in Table 2.2. Relationships between the exploitation rate indicator stocks, model stocks, and PST Annex stocks are provided in Appendix A.

For AABM fisheries, fishery indices are presented for both reported catch and total mortality; only total mortality indices are presented for the ISBM fisheries. The difference between reported catch and total mortality is IM, which includes mortality of legal-size fish in CNR fisheries and mortality of sublegal-size fish in both retention and CNR fisheries. Management strategies have changed considerably for fisheries of interest to the PSC since 1985. Regulatory changes have included size limit changes, extended periods of CNR in troll fisheries, and mandatory release of Chinook salmon caught in some net fisheries. Estimates of IM are crucial for assessment of total fishery impacts, yet they cannot be determined directly from CWT recovery data. There are four categories of IM that are estimated in the PSC Chinook Model and the CWT cohort analysis. Legal and sublegal fishery-specific mortality rates are applied to the following types of Chinook salmon encounters.

1. Shakers: Chinook salmon below the legal size limit that are encountered, brought to the boat, and released during a Chinook salmon retention fishery.
2. Sublegal CNR: Chinook salmon below the legal size limit that are encountered, brought to the boat, and released during a Chinook salmon nonretention fishery. The mortality rate per encounter applied to sublegal CNR is the same as applied to shakers.
3. Legal CNR: Chinook salmon above the legal size limit that are encountered, brought to the boat, and released during a Chinook salmon nonretention fishery.
4. Drop-off: Chinook salmon above or below the legal size limit that are encountered, but lost from the gear before they reach the boat during either retention or nonretention fisheries. Drop-off mortality is assumed the same for legal and sublegal fish, but can vary by gear type.

The procedures used to estimate IM in the PSC Chinook Model have been described by the CTC Analytical Working Group (CTC AWG 1991)[1] and CTC (2004).

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[1] Chinook Technical Committee Analysis Work Group. Unpublished. Draft 1991 PSC Chinook Model Documentation. Chinook Technical Committee Analysis Workgroup.

### 2.1.2 Brood Year Exploitation Rates

Brood year exploitation rates (BYER) provide a measure of the cumulative impact of fisheries upon all age classes of a stock and brood. The BYER was computed for each stock as the ratio of adult equivalent (AEQ) total fishing mortality to AEQ total fishing mortality plus escapement.

$$BYER_{BY,F} = \frac{\sum_{a=Minage}^{Maxage}\left(\sum_{f\in\{F\}} TotMorts_{BY,a,f} * AEQ_{BY,a,f}\right)}{\sum_{a=Minage}^{Maxage}\left(\sum_{f=1}^{Numfisheries} TotMorts_{BY,a,f} * AEQ_{BY,a,f} + Esc_{BY,a}\right)} \qquad \text{Equation 2.1}$$

The AEQ factor represents the proportion of fish of a given age that would, in the absence of fishing, leave the ocean to return to the terminal area.

The AEQ factor is calculated as

$$\begin{aligned} AEQ_{BY,a-1,f} &= MatRte_{a-1,BY} + (1 - MatRte_{a-1,BY}) * Surv_a * AEQ_{BY,a,f} \\ AEQ_{BY,Maxage,f} &\equiv 1.0 \end{aligned} \quad . \qquad \text{Equation 2.2}$$

The AEQ factor is equal to 1 for the oldest age of maturation and for all ages in terminal fisheries. See Table 2.3 for a description of notation.

The numerator of the BYER may be partitioned into components for AEQ reported catch and AEQ IM, with each component occurring in either ocean fisheries or terminal fisheries.

The exploitation rate on an indicator stock will differ from the exploitation rate on the wild stock it represents if the indicator stock is subject to terminal fisheries directed at harvesting surplus hatchery production. This difference was addressed by including only ocean fisheries in the computation of the BYER for indicator stocks that had terminal fisheries targeting hatchery fish. The method selected for each exploitation rate indicator stock is given in Table 2.2. BYERs were not computed for incomplete BYs.

*Table 2.3 Parameter definitions for all equations except those used for the SPFI.*

| Parameter | Description |
|---|---|
| $a$ = | age class |
| $A$ = | set of all ages that meet selection criteria |
| $AEQ_{BY,a,f}$ = | adult equivalent factor in brood year $BY$, age $a$, and fishery $f$ (for terminal fisheries, AEQ = 1.0 for all ages) |
| $CohSurv_{BY,a=2or3}$ = | cohort survival of CWT fish to age 2 or 3 for brood year $BY$ |
| $AvgMatRte_{a}$= | average maturation rate for age $a$ |
| $BPYR$ = | base period year |
| $BYER_{BY,f}$= | brood year exploitation rate in adult equivalents for brood year $BY$ and fishery $F$ |
| $BPISBMER_{f,a}$= | average base period ISBM exploitation rate for fishery $f$ and age $a$ |
| $BY$ = | brood year |
| $Cohort_{BY,a}$= | cohort by brood year $BY$ and age $a$ (*where stock is implied from context*) |
| $Cohort_{s,BY,a}$= | cohort by stock $s$, brood year $BY$ and age $a$ (*where stocks are defined explicitly in a summation*) |
| $CY$ = | calendar year |
| $CYDist_{CY,F}$= | proportion of total stock mortality (or escapement) in a calendar year $CY$ attributable to a fishery or a set of fisheries $F$ |
| $CY_{end}$ = | end year for average |
| $CY_{start}$ = | start year for average |
| $d_{t,s,a}$= | distribution parameter for timestep $t$, stock $s$, and age $a$ |
| $Esc_{Y,a}$ = | escapement past all fisheries for either brood year $BY$ or calendar year $CY$ and age a |
| $ER_{s,a,f,CY}$ = | exploitation rate at age $a$ divided by cohort size at age $a$ for stock $s$ in fishery $f$ in year $CY$ |
| $EV_{n,BY}$ = | the stock productivity scalar for iteration $n$ and brood year $BY$ |
| $f$ = | a single fishery |
| $f\in\{F\}$ = | a fishery $f$ within the set of fisheries of interest |
| $F$ = | ocean, terminal or other sets of fisheries or spawning escapements |
| $FI_{f,CY}$ = | fishery exploitation rate index for fishery $f$ in year $CY$ |
| $FP_{a.s.CY,f}$= | ratio of $ER_{s,a,f,CY}$ to $BPISBMER$ |
| $ISBMIdxCY$ = | ISBM index for calendar year $CY$ |
| $MatRte_{a-1,BY}$ = | maturity rate at next younger age by brood year |
| $Maxage$ = | maximum age of stock (generally age 6 for stream type stocks, age 5 for ocean type stocks) |
| $Minage$ = | minimum age of stock (generally age 3 for stream type stocks, age 2 for ocean type stocks) |
| $Morts_{CY,a,f}$= | landed or total fishing mortality in year $CY$ and age $a$ in fishery $f$ |
| $NM_{a}$ = | annual natural mortality prior to fishing on age $a$ cohort |
| $Numfisheries$ = | total number of fisheries |
| $RT_{CY}$ = | ratio of the catch quota in the current year to the catch that would be predicted given current abundance, current size limits, and base period exploitation rates |
| $s$ = | a particular stock |
| $S$ = | set of all stocks that meet selection criteria |
| $SC_{BY}$ = | ratio of the estimated and model predicted terminal run for brood year $BY$ |
| $Surv_{a}$ = | survival rate (1-$NM_{a}$) by age |
| $TotMorts_{BY,a,f}$ = | total fishing related mortality for brood year $BY$ or calendar year $CY$ or during the base period BPER and age $a$ in fishery $f$ |
| $TotCWTRelease_{BY}$ = | number of CWT fish released in the indicator group in brood year $BY$ |

### 2.1.3 Brood Year Survival Rates

The BY survival of CWT-tagged smolts after release is calculated for most exploitation rate indicator stocks (Table 2.2). This survival rate is frequently referred to as the marine survival of the tag group but also includes any mortality occurring in freshwater following release. Two measures of survival indices or patterns are computed: (1) survival to the age 2 (age 3 for yearling stocks) cohort based on CWT recoveries, and (2) the environmental variable (EV) determined from the calibration of the PSC Chinook Model (described in the model methods section). The CWT-based estimate is our most direct measure of a brood's survival, but this measure is not final until the brood is complete (i.e., all ages have returned to spawn). Preliminary estimates are generated, but not reported, for incomplete broods using available CWT data and average maturation rates. The EV parameter, however, provides a more current measure of the survival rates expected in BYs contributing to present and future fisheries.

For CWT data, the BY survival rate for a fingerling stock is the estimated age-2 cohort (from the cohort analysis) divided by the number of CWT fish released, whereas for yearling stocks, the survival rate is calculated for the estimated age-3 cohort.

$$CohSurv_{BY,a=2or3} = \frac{Cohort_{BY,a=2or3}}{TotCWTRelease_{BY}} \qquad \text{Equation 2.3}$$

where $Cohort_{BY,a}$ is calculated recursively from the oldest age down to the youngest age using

$$Cohort_{BY,a} = \frac{\sum_{f=1}^{Numfisheries} TotMorts_{BY,a,f} + Esc_{BY,a} + Cohort_{BY,a+1}}{1-NM_{a}}. \qquad \text{Equation 2.4}$$

If there are no CWT recoveries for the oldest ocean age of a stock, the next youngest cohort size is estimated using

$$Cohort_{BY,\max age-1} = \frac{\sum_{f\in Preterminal} TotMorts_{BY,\max age-1,f} + \frac{Esc_{BY,\max age-1} + \sum_{f\in Terminal} TotMorts_{BY,\max age-1,f}}{AvgMatRte_{\max age-1}}}{1-NM_{\max age-1}}. \qquad \text{Equation 2.5}$$

For each stock, the survival rate for each BY is divided by the average survival rate for all BYs to create a survival index for each BY as

$$CohSurvIndex_{BY,a=2or3} = \frac{CohortSurv_{BY,a=2or3}}{LongTermAvgCohortSurvival}. \qquad \text{Equation 2.6}$$

### 2.1.4 Stock Distribution Patterns

The distributions of mortalities (reported catch and total) among fisheries and escapement in a catch year were calculated for each stock to determine the exploitation patterns. The distributions were computed if at least three BYs contributed to the CWT recoveries for a catch year. Distributions were computed for each fishery across all ages present in the catch year as

$$CYDist_{CY,F} = \frac{\sum_{a=Minage}^{Maxage} \sum_{f \in \{F\}} Morts_{CY,a,f} * AEQ_{BY=CY-a,a,f}}{\sum_{a=Minage}^{Maxage} \left( \sum_{f=1}^{Numfisheries} Morts_{CY,a,f} * AEQ_{BY=CY-a,a,f} + Esc_{CY,a} \right)}.$$

*Equation 2.7*

Mortality distribution tables may not indicate the true distribution of an indicator stock. For example, closure of a fishery would result in no CWT recoveries but this would not necessarily indicate zero abundance of the stock in that fishing area.

### 2.1.5 Fishery Indices

When the PST was negotiated in 1985, catch ceilings and increases in stock abundance were expected to reduce harvest rates in fisheries. The fishery index (FI) provided a means to assess performance against this expectation. Relative to the base period, an index less than 1.0 represents a decrease from base period harvest rates while an index greater than 1.0 represents an increase. While the determination of allowable catch for AABM fisheries in the 2009 Agreement is different from the original PST catch ceilings, these fishery indices continue to provide a useful index of change in harvest rates in these fisheries. Fishery indices are used to measure relative changes in fishery harvest rates because it is not possible to directly estimate the fishery harvest rates.

Fishery indices are computed in AEQs for both reported catch and total mortality (reported catch plus IM). The total mortality AEQ exploitation rate is estimated as

$$ER_{s,a,f,CY} = \frac{TotMorts_{s,a,f,CY} * AEQ_{s,BY=CY-a,a,f}}{Cohort_{s,BY=CY-a,a} * (1 - NM_a)},$$

*Equation 2.8*

while the reported catch AEQ exploitation rate is estimated as

$$ER_{s,a,f,CY} = \frac{\operatorname{Re}pMorts_{s,a,f,CY} * AEQ_{s,BY=CY-a,a,f}}{Cohort_{s,BY=CY-a,a} * (1 - NM_a)},$$

*Equation 2.9*

and a ratio of means (ROM) estimator is used to calculate the fishery index (FI)

$$FI_{f,CY} = \frac{\sum_{s \in \{S\}} \sum_{a \in \{A\}} ER_{s,a,f,CY}}{\left( \frac{\sum_{BPYR=79}^{82} \sum_{s \in \{S\}} \sum_{a \in \{A\}} ER_{s,a,f,BPYR}}{4} \right)}. \qquad \textit{Equation 2.10}$$

For AABM fisheries, indices are presented for troll gear only, although the catch limitations also apply to recreational fisheries and net fisheries in SEAK and the recreational fisheries in NBC and WCVI. As in past years, recoveries from the troll fishery were used because the majority of the catch and the most reliable CWT sampling occur in these fisheries. In addition, there are data limitations in the base period for the sport fisheries (e.g., few observed recoveries in NBC due to small fishery size). Because the allocation of the catch among gear types has changed in some fisheries (e.g., the proportion of the catch harvested by the sport fishery has increased in all AABM fisheries), the indices may not represent the harvest impact of all gear types.

The CTC uses fishery indices to reflect changes in fishery impacts relative to the base period (catch years 1979–1982). The ROM estimator of the fishery index limits inclusion of stocks to those with adequate tagging during the base period, but fishing patterns for some fisheries have changed substantially since the base period and some stocks included in the index are no longer tagged (e.g., University of Washington Accelerated). One example of a change in the fishing pattern is the SEAK troll fishery—where the catch during the winter season has increased, the spring fishery has been largely curtailed, and the summer season has become markedly shorter. Because stock distributions are dynamic throughout the year, stock-specific impacts of the SEAK fishery have likely changed over time.

To account for changes in stock composition and to include stocks without base period data, the CTC has created alternative derivations of fishery indices (CTC 1996).The CTC determined that a useful fishery index should reflect both changes in harvest rates and stock distribution. Three general, desirable characteristics were identified:

1. The index should measure changes in fishery harvest rates if the distribution of stocks is unchanged from the base period.
2. The index should have an expected value of 1.0 for random variation around the base period fishery harvest rate, cohort size, and stock distributions.
3. The index should weight changes in stock distribution by abundance.

After exploring several alternatives, the CTC concluded that the best estimate for a fishery index would consist of the product of a fishery harvest rate index and an index of stock abundance weighted by average distribution (i.e., the proportion of a cohort vulnerable to the fishery). To that effect a report by the CTC (2009a) stated that for all AABM fisheries the stratified proportional fishery index (SPFI) was the most accurate and precise in estimating the harvest rate occurring in a fishery.

For computation of the SPFI, the CWT harvest rate ($h_{t,CY}$) must initially be set to an arbitrary value between 0 and 1. Then, the distribution parameter ($d_{t,s,a}$) is calculated (Equation 2.11), and the result is substituted into Equation 2.12 to recursively recalculate $h_{t,CY}$ and subsequently $d_{t,s,a}$. The largest stock-age distribution parameter in a stratum is then set to 1 to create a unique solution. See Table 2.4 for notation description.

$$d_{t,s,a} = \sum_{CY} r_{t,CY,s,a} \Big/ \sum_{CY} \left(h_{t,CY} * n_{CY,s,a}\right)$$

*Equation 2.11*

$$h_{t,CY} = \sum_{s}\sum_{a} r_{t,CY,s,a} \Big/ \sum_{s}\sum_{a} \left(d_{t,s,a} * n_{CY,s,a}\right)$$

*Equation 2.12*

The resulting unique solution is inserted into the following equations to compute the yearly harvest rates for each strata and the overall fishery.

$$H_{t,CY} = \left[\left(\frac{\sum_{s}\sum_{a} c_{t,CY,s,a}}{\sum_{s}\sum_{a} r_{t,CY,s,a}}\right) * \left(C_{t,CY} - A_{t,CY}\right)\right] \Bigg/ \left[\left(C_{t,CY} - A_{t,CY}\right) / h_{t,CY}\right]$$

*Equation 2.13*

$$H_{.CY} = \sum_{t}\left[\left(\frac{\sum_{s}\sum_{a} c_{t,CY,s,a}}{\sum_{s}\sum_{a} r_{t,CY,s,a}}\right) * \left(C_{t,CY} - A_{t,CY}\right)\right] \Bigg/ \sum_{t}\left[\left(C_{t,CY} - A_{t,CY}\right) / h_{t,CY}\right]$$

*Equation 2.14*

$$S_{t,CY} = H_{t,CY} \Big/ \sum_{CY=1979}^{1982} H_{t,CY}$$

*Equation 2.15*

$$S_{.CY} = H_{.CY} \Big/ \sum_{CY=1979}^{1982} H_{.CY}$$

*Equation 2.16*

*Table 2.4 Parameter descriptions for equations used for the SPFI.*

| Parameter | Description |
|---|---|
| $A_{t,CY}$ = | Alaska hatchery origin catch by strata *t*, year *CY* |
| $c_{t,CY,s,a}$ = | adult equivalent CWT catch by strata *t*, year *CY*, stock *s* and age *a* |
| $C_{t,CY}$ = | catch by strata *t*, year *CY* |
| $d_{t,s,a}$ = | distribution parameter by strata *t*, stock *s* and age *a* |
| $h_{t,CY}$ = | CWT harvest rate by strata *t*, year *CY* |
| $H_{CY}$ = | harvest rate by year *CY* |
| $H_{t,CY}$ = | harvest rate by strata *t*, year *CY* |
| $n_{CY,s,a}$ = | CWT cohort size by year *CY*, stock *s* and age *a* |
| $r_{t,CY,s,a}$ = | CWT recoveries by strata *t*, year *CY*, stock *s* and age *a* |
| $S_{.CY}$ = | SPFI by year *CY* |
| $S_{t,CY}$= | SPFI by strata *t*, year *CY* |

## 2.1.6 ISBM Indices

The CTC (1996) proposed a nonceiling fishery index as a measure of the pass-through provision in specified in the 1985 PST. This index compares an *expected* AEQ mortality (assuming base period exploitation rates and current stock abundance) with the observed AEQ mortality on a stock within a calendar year, over all non-AABM fisheries of a Party (Table 2.5). Index values less than 1.0 indicate that the exploitation rates have decreased relative to the base period. Paragraph 8(d), Chapter 3 of the 2009 PST Agreement directs the CTC to use these ISBM indices to measure the performance of ISBM fisheries:

"(d) unless otherwise recommended by the CTC and approved by the Commission, the non-ceiling index defined in CTC (2005) where data are available for the required time periods, the average total annual AEQ mortality rate that occurred in 1991 to 1996, or an alternative metric recommended by the CTC and approved by the Commission will be used to monitor performance of ISBM fisheries relative to the obligations set forth in this paragraph;"

*Table 2.5 Fisheries included in the ISBM index by nation.*

| **Fisheries Included in ISBM Index** | |
|---|---|
| **United States** | **Canada** |
| Washington/Oregon Ocean Troll | Central BC Troll |
| Puget Sound Northern Net | Strait of Georgia Troll |
| Puget Sound Southern Net | North BC Net |
| Washington Coastal Net | Central BC Net |
| Freshwater Terminal Net | West Coast Vancouver Island Net |
| Washington/Oregon Ocean Sport | Strait of Juan de Fuca Net |
| Puget Sound Northern Sport | Johnstone Strait Net |
| Puget Sound Southern Sport | Fraser Net |
| Freshwater Terminal Sport | Freshwater BC Net |
| | Strait of Georgia Sport |
| | Strait of Juan de Fuca Sport |
| | Freshwater BC Sport |

The ISBM index is computed as

$$ISBMIdx_{CY} = \frac{\sum_{f \in \{F\}} \sum_{a=Minage}^{Maxage} \left( TotMorts_{CY,f,a} * AEQ_{BY=CY-a,a,f} \right)}{\sum_{f \in \{F\}} \sum_{a=Minage}^{Maxage} \left( BPISBMER_{f,a} * Cohort_{BY=CY-a,a} \right)},$$

*Equation 2.17*

where

$$BPISBMER_{f,a} = \frac{\sum_{BPER=79}^{82} \frac{\left( TotMorts_{BPER,f,a} * AEQ_{BY=BPER-a,a,f} \right)}{Cohort_{BY=BPER-a,a}}}{4}.$$

*Equation 2.18*

Direct application of the PSC Chinook Model alone or CWT data alone was not possible in the computation of all ISBM indices; some fisheries required a finer resolution than the CTC model currently provides, or some terminal fisheries target only marked hatchery fish, which makes the estimated CWT-based exploitation rate nonrepresentative of the untagged stocks. In those instances the following methods were used.

For terminal fisheries with marked harvest rates that were not representative of the untagged stocks of interest, external estimates were used instead of model estimates. For preseason estimates, the Fisheries Regulation Assessment Model was used to generate external estimates for Puget Sound net and sport fisheries, and the Columbia River Harvest Model was used to generate external estimates for Columbia River net and sport fisheries. For postseason CWT-based estimates, base period exploitation rates for the model stock associated with the wild stock were used if the indicator stock did not have base period recoveries.

Many ISBM fisheries or stock/fishery combinations have no preseason predictions of harvest rates and some have no abundance forecasts. In those cases, the previous year's harvest rates were assumed.

## 2.2 RESULTS

In this section, key ERA results are reviewed on a region-by-region basis and discussed briefly in terms of general patterns and trends at the stock and stock group level. Results are presented for the following ERA metrics: BY exploitation rate (total or ocean, depending on stock), early marine survival rate, and mortality distribution. While some of this content is germane to assessments on the effectiveness of the PST, such evaluations necessitate that other information also be considered (e.g., performance of escapement indicator stocks, AABM and ISBM fisheries, etc.). Thus, the emphasis of this section is on pattern description only, not on drawing inferences about cause-effect relationships due to changing management regimes.

## 2.2.1 Southeast Alaska Stocks

There are four wild CWT indicator stocks in SEAK and one hatchery CWT indicator stock used in CTC analyses. The four wild stocks are the Chilkat River (CHK), Stikine River (STI), Taku River (TAK), and Unuk River (UNU). The SEAK wild stocks are not currently used to represent a PSC Chinook Model stock, but were proposed for model stocks in 1998 and data sets were developed. An effort is currently underway to update these datasets and incorporate them into the PSC Chinook Model. The SEAK hatchery indicator stock, Alaska Spring (AKS), is composed of tag recoveries released from five SEAK hatcheries (Little Port Walter, Crystal Lake, Neets Bay, Deer Mountain, and Whitman Lake), and it is used to represent the Alaska Southern Southeast model stock. Escapement and age structure data comes from summing information from six wild stocks (Unuk, Chickamin, Blossom, Keta, King Salmon, and Andrew Creek). SEAK wild and hatchery stocks enter the ocean as yearlings, and age 3 is the youngest age at which CWTs are recovered. The CHK and STI time series begins in BYs 1999 (CHK) and 1998 (STI), while the TAK and UNU time series begin earlier but contain BYs where no tagging occurred. The AKS time series begins in BY 1976 and includes every year since.

### 2.2.1.1 Brood Year Exploitation Rates

The BYERs computed for CHK, STI, TAK, and UNU include recoveries from ocean and terminal fisheries. The BYER computed for AKS does not include terminal recoveries because the exploitation rate on hatchery fish in the terminal areas is not representative of the exploitation rate on SEAK wild stocks in terminal areas. The AKS BYER is usually above 30%, but has been at or below 30% for the last five complete BYs (Figure 2.2; Table 2.6). The BYERs for SEAK wild stocks are relatively low (usually less than 20% for CHK and TAK, and usually less than 30% for STI and UNU; Figure 2.3; Table 2.6). The percentage of the AKS BYER that is incidental mortalities has decreased substantially since the 1980s and early 1990s.

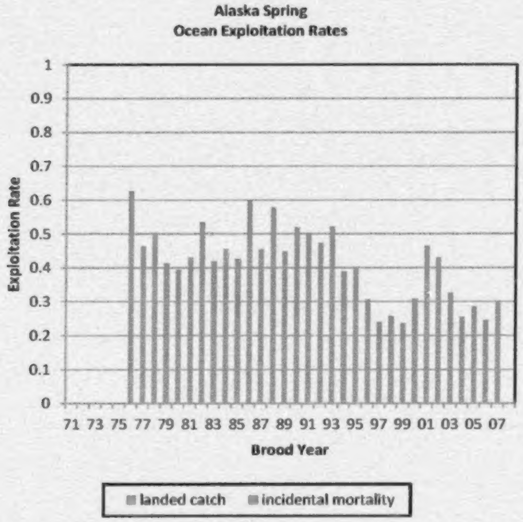


*Figure 2.2 Brood year exploitation rate for SEAK hatchery indicator stocks. Catch and incidental mortality are shown. Only completed brood years are included.*

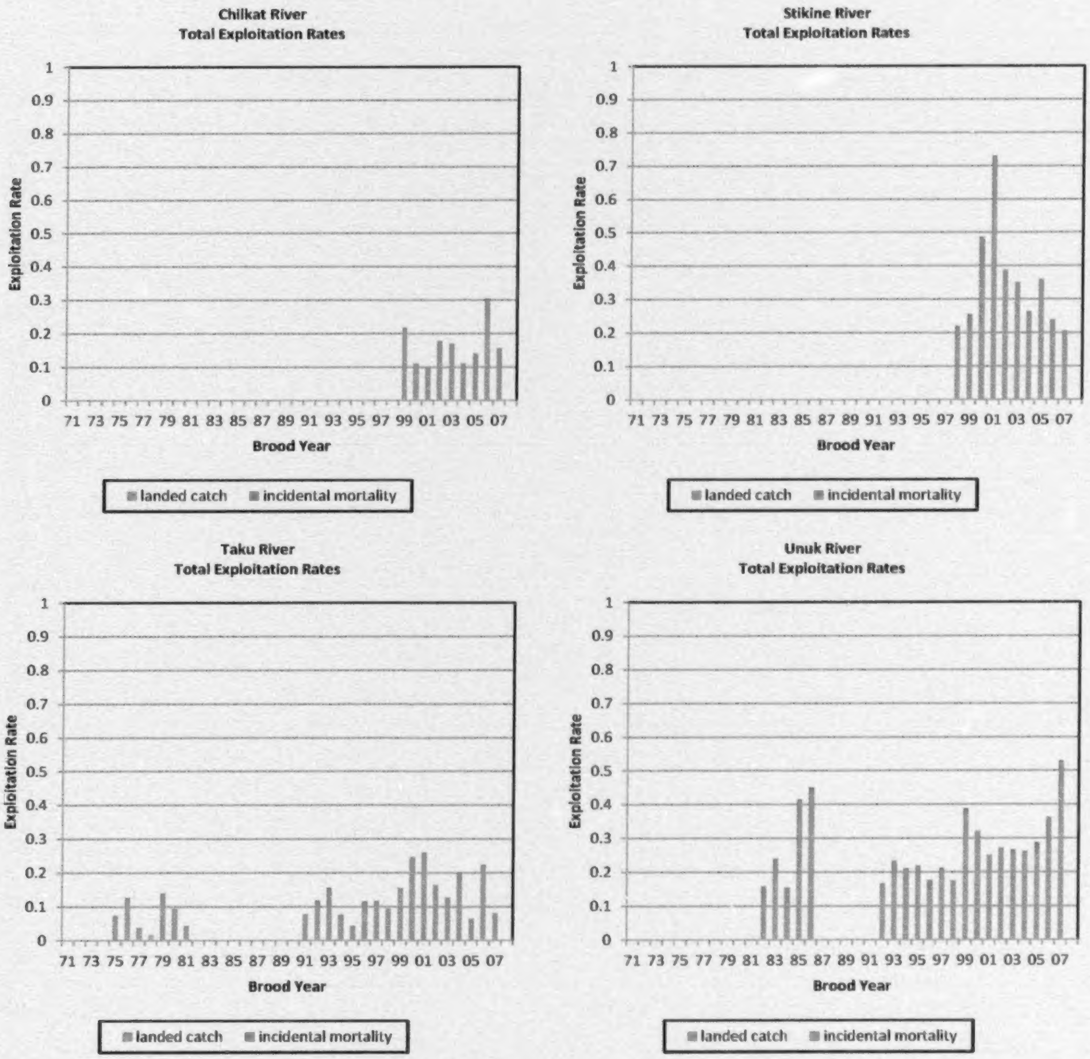


*Figure 2.3* *Brood year exploitation rate for SEAK wild indicator stocks. Catch and incidental mortality are shown. Only completed brood years are included.*

*Table 2.6 Summary of statistics generated by the 2014 CWT cohort analysis for SEAK and TBR indicator stocks. Statistics include total mortality (catch plus incidental mortality) brood year exploitation rate (BYER), cohort survival rate to age 3, and calendar year (CY) percent distribution of the total mortality in the escapement for Agreement periods 1999–2008 and 2009–present.*

| | | | | | | CY % Escapement[1] | | |
|---|---|---|---|---|---|---|---|---|
| | | BYER (total mortality) | | Survival rate | | 1999–2008 | 2009–present | |
| Stock | Indicator Stock Name | Mean (range) | Last complete BY | Mean (range) | Last complete BY | Mean (range) | Mean (range) | Last CY (if ≠ current) |
| AKS | Alaska Spring[2] | 41%<br>(24–63%) | 30%<br>(2007) | 8.52%<br>(2.14–26.08%) | 3.21%<br>(2007) | 49%<br>(33–62%) | 47%<br>(25–58%) | 39%<br>(2013) |
| CHK | Chilkat River | 17%<br>(10–30%) | 16%<br>(2007) | 3.94%<br>(1.55–6.29%) | 4.31%<br>(2007) | 84%<br>(74–91%) | 80%<br>(72–91%) | 81%<br>(2013) |
| STI | Stikine River | 35%<br>(21–73%) | 21%<br>(2007) | 3.49%<br>(1.18–6.19%) | 4.76%<br>(2007) | 61%<br>(41–81%) | 74%<br>(64–85%) | 85%<br>(2013) |
| TAK | Taku River | 12%<br>(2–26%) | 8%<br>(2007) | 8.22%<br>(1.77–26.04%) | 8.16%<br>(2007) | 86%<br>(62–95%) | 89%<br>(76–97%) | 97%<br>(2013) |
| UNU | Unuk River | 27%<br>(15–53%) | 53%<br>(2007) | 5.16%<br>(1.40–13.23%) | 1.95%<br>(2007) | 75%<br>(63–84%) | 64%<br>(42–78%) | 61%<br>(2013) |

[1] % Escapement is not a measure of performance for the escapement indicator stock(s) associated with a given CWT indicator stock. See CTC (2013) for these details.

[2] BYER is ocean exploitation rate only.

### 2.2.1.2 Survival Rates

Survival rates for SEAK and TBR stocks were computed as the survival to age 3 because the fish enter the ocean as yearlings. The Chilkat River survival rates ranged from 2% to 6% and had a survival rate of 4% for the last complete BY (Figure 2.4; Table 2.6). The Stikine River survival rates ranged from 1% to 6% and had a survival rate of 5% for the last complete BY (Figure 2.4; Table 2.6). The Taku River can have extremely good survival rates (>25%), but has been below the long-term average (8.22%) for the last seven complete BYs (Figure 2.5; Table 2.6). The Unuk river survival rates historically have been as high as 13%, but its last seven complete BYs have been below average (5.16%; Figure 2.5; Table 2.6). The survival rates for the AKS stock has ranged from 26% for BY 1976 to 2% for BY 1977, and the last four complete BYs for AKS have been below the long-term average (8.52%), with a last complete BY (2007) survival rate of 3% (Figure 2.6; Table 2.6).Correlation between the AKS survival and EV index was low (r = 0.08) for the entirety of the time series, but moderately correlated (r = 0.37) in BYs 1981–2007 (Figure 2.6).

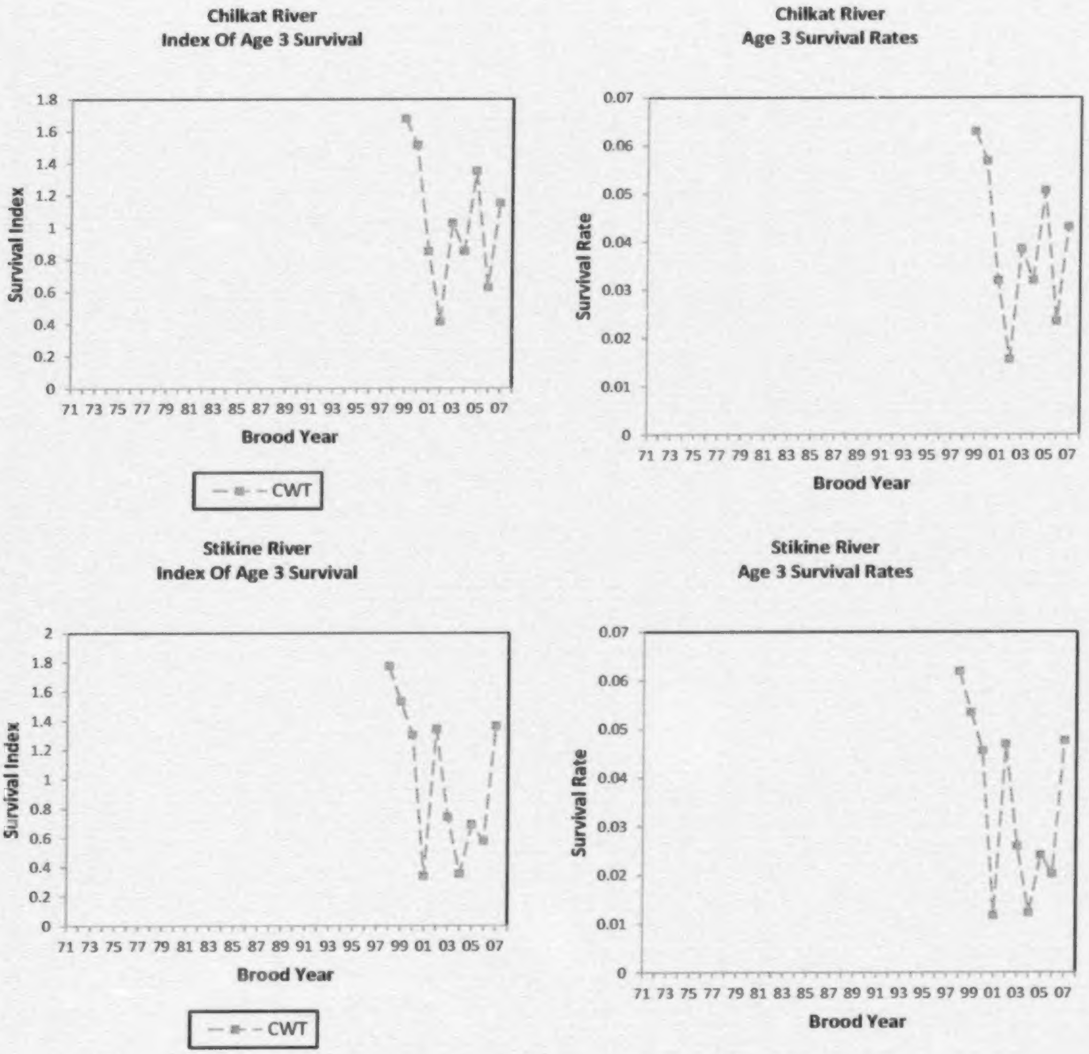


*Figure 2.4 CWT survival and EV indices and survival rate for Chilkat and Stikine stocks.*

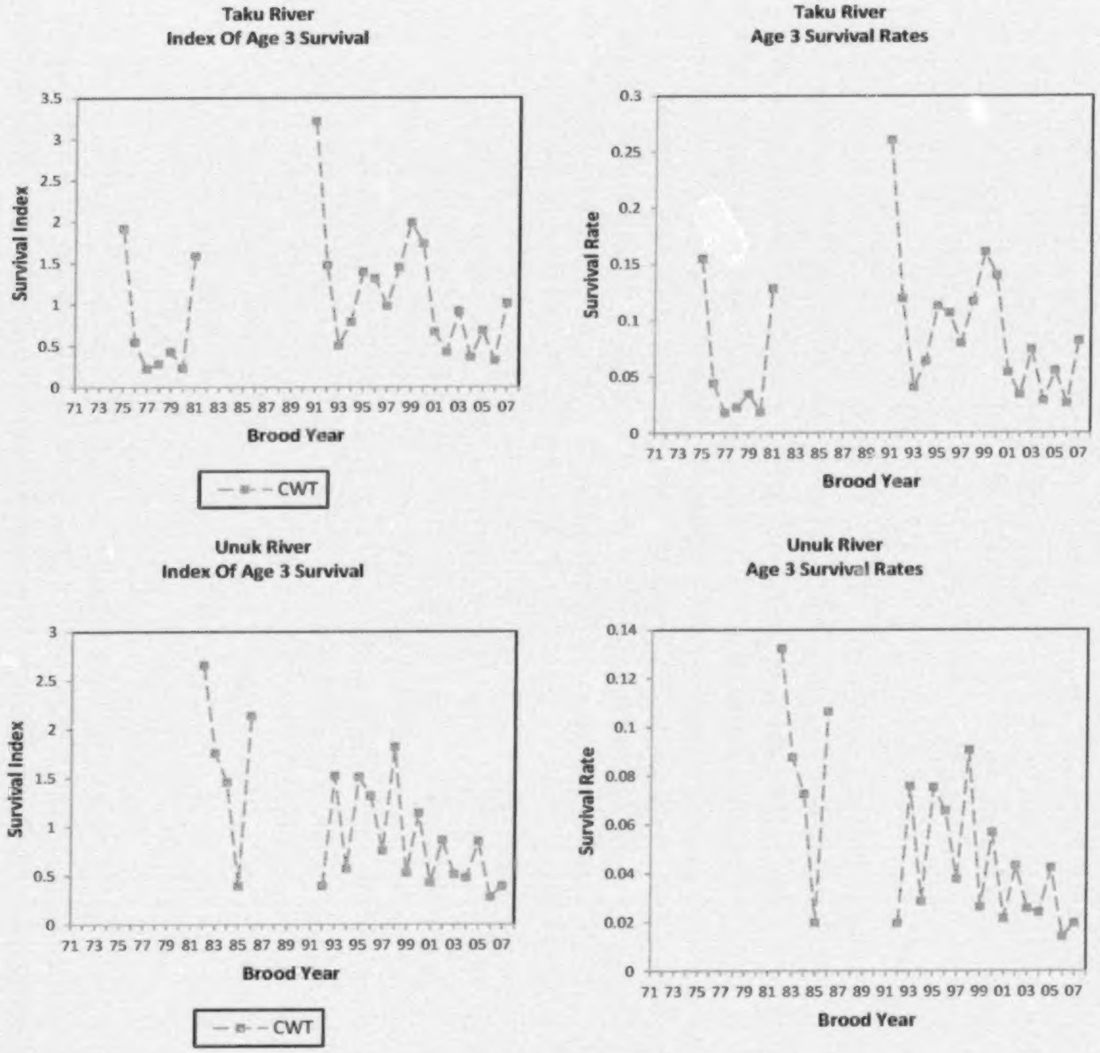


*Figure 2.5* CWT survival and EV indices and survival rate for Taku and Unuk stocks.

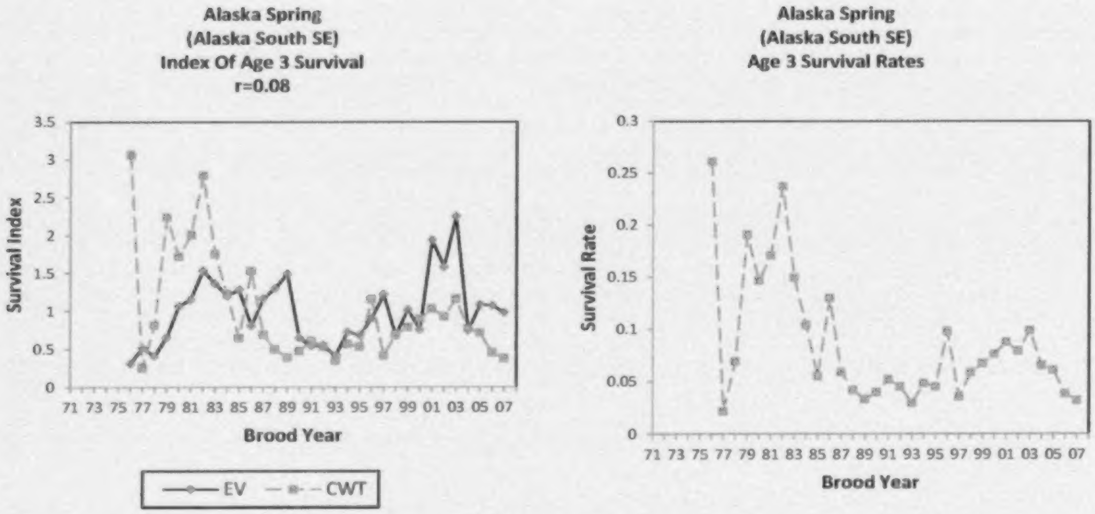


*Figure 2.6 CWT survival and EV indices and survival rate for Alaska Spring stock. r: Pearson correlation coefficient between CWT and EV survival indices.*

### 2.2.1.3 Mortality Distributions

A high percentage of CHK mortalities (2004–2013 average of 82%; Figure 2.7; Table 2.6; Appendix C10), STI mortalities (2003–2013 average of 67%; Figure 2.7; Table 2.6; Appendix C84), TAK mortalities (1999–2013 average of 87%; Figure 2.7; Appendix C90), and UNU mortalities (1999–2013 average of 72%; Figure 2.7; Table 2.6; Appendix C92) occurred after fisheries (i.e., within the escapement), with most of the remaining mortalities caught in the SEAK AABM sport, troll, and net fisheries. Of the SEAK AABM fisheries in the 1999–2013 time period, the SEAK troll fishery caught a higher percentage of STI fish (average of 13%), TAK fish (average of 4%), and UNU fish (average of 15%), while the SEAK net fishery caught a higher percentage of CHK fish (average of 8%). A few STI and UNU mortalities have occurred in the Canadian net and NBC troll and sport fisheries in some years. Approximately 48% of AKS mortalities occurred at hatcheries in the 1999–2013 time period, with the remaining mortalities occurring in the SEAK AABM, SEAK terminal net, and terminal fisheries. The SEAK AABM troll fishery accounted for an average of 21% of the AKS total mortalities for the 1999–2013 time period, while the SEAK AABM sport and terminal sport averaged 6% (sport) and 3% (terminal sport; Figure 2.5; Table 2.6; Appendix C2).

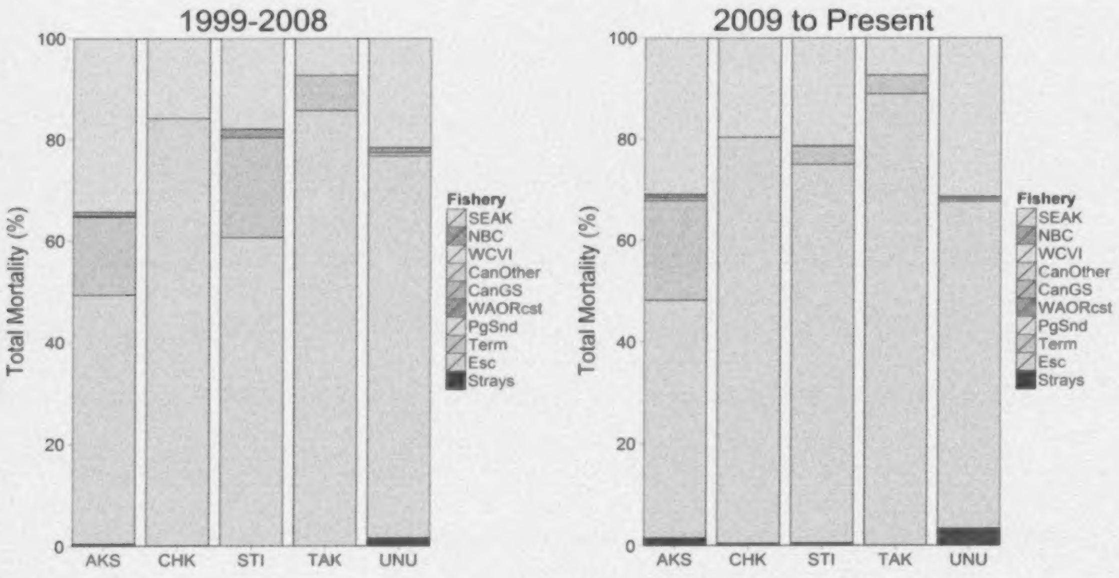


*Figure 2.7 Distribution of total mortality for SEAK indicator stocks for the current (2009–present) and previous (1999–2008) agreement periods.*

## 2.2.2 North and Central British Columbia Stocks

There are two hatchery CWT indicator stocks for North/Central BC, Kitsumkalum and Atnarko. Atnarko (ATN) is composed of tag recoveries from the Snootli Hatchery and is not currently used to represent a PSC Chinook Model stock. The Kitsumkalum hatchery indicator stock (KLM) is composed of tag recoveries from the Deep Creek Hatchery, and it is used to represent the North/Central BC model stock NTH. Kitsumkalum Chinook enter the ocean as yearlings and age 3 is the youngest age at which CWTs are recovered, whereas Atnarko Chinook enter the ocean as subyearlings and age 2 is the youngest age recovered. The KLM time series begins in BY 1979, while the ATN time series begins in BY 1986. There were no KLM CWT releases in 1982, and no ATN CWT releases in 2003 and 2004.

#### 2.2.2.1 Brood Year Exploitation Rates

The BYERs computed for KLM and ATN include recoveries from ocean fisheries and terminal fisheries. While the BYER for KLM has been generally decreasing from levels greater than 60% in 1979–1980 to approximately 33% in 2007, the BYER for ATN has been generally increasing from approximately 34% in 1986 to approximately 55% in 2007 (Figure 2.8). KLM BYER averaged 41% and ranged from 22% for BY 2004 to 67% for BY 1979, whereas ATN BYER averaged 42% and ranged from 28% for BY 1990 to 61% for BY 2006. Incidental mortalities have tended to make up an increasing proportion of the KLM BYER, averaging 15% of the total mortality with a range of 9–22%. In the case of ATN, the percentage of the BYER that is IM tends to decrease over time, averaging 8.0% with a range of 5–11%.

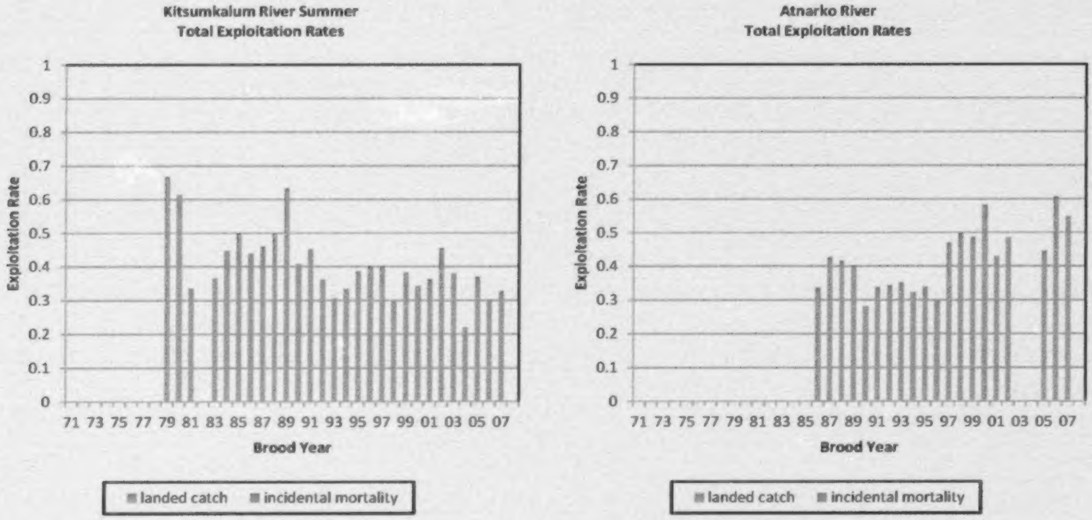


*Figure 2.8 Total brood year exploitation rate for North and Central BC stocks. Catch and incidental mortality are shown. Only completed brood years are included.*

### 2.2.2.2 Survival Rates

The survival rate of KLM is survival to age 3 because the fish enter the ocean as yearlings while the survival rate of ATN is survival to age 2 because the fish enter the ocean as subyearlings. The KLM survival rates have averaged 1.0% and ranged from around 0.1–2.4% with a survival rate of 0.7% for the last complete BY. In the case of ATN, survival rates have averaged 2.2% and ranged from around 0.5–4.9% with a survival rate of 1.6% for the last complete BY (Figure 2.9). The EV index and the survival index are poorly correlated in both KLM and ATN with r = 0.18 (KLM) and r = 0.31 (ATN).

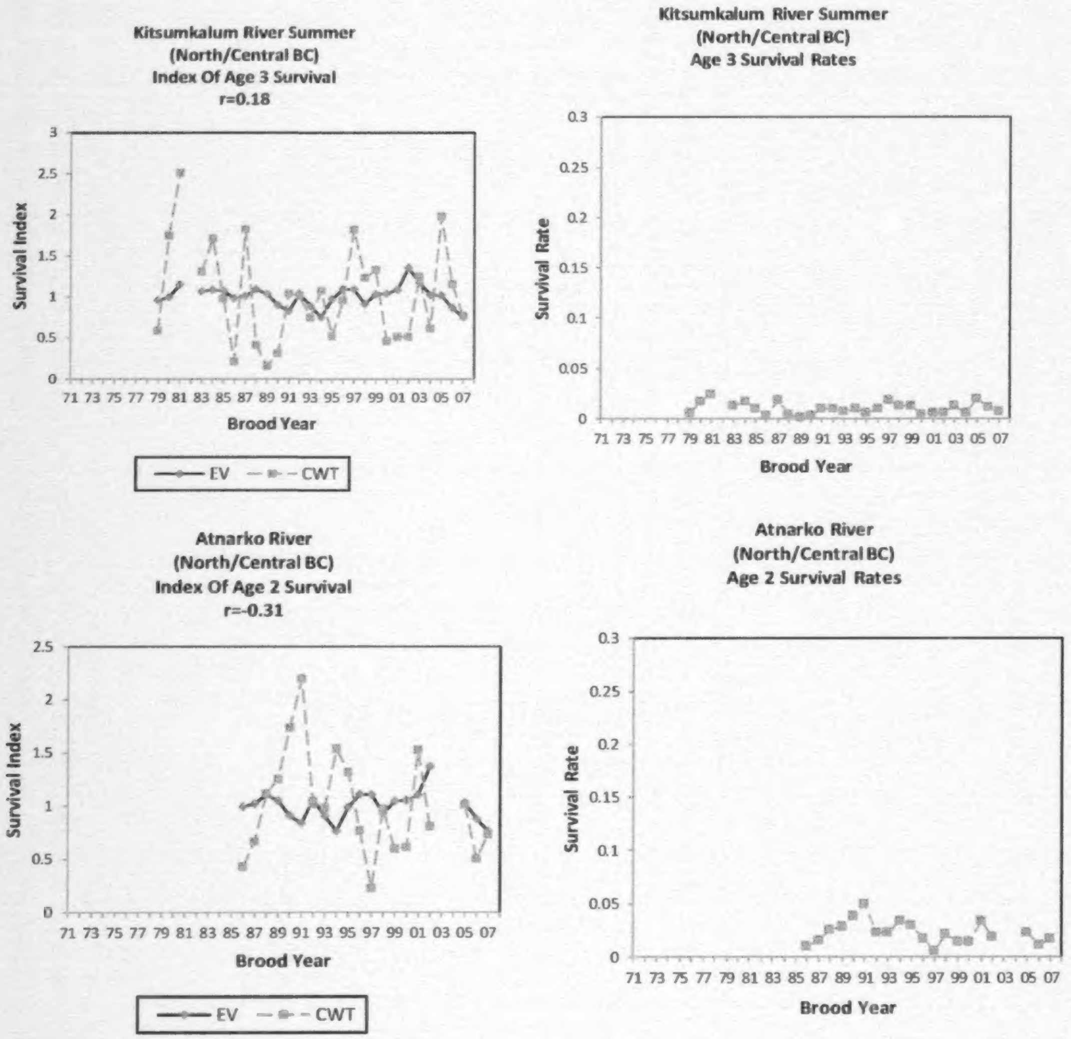


*Figure 2.9 CWT survival and EV indices and survival rate for North and Central BC stocks. r: Pearson correlation coefficient between CWT and EV survival indices.*

### 2.2.2.3 Mortality Distributions

Escapement accounted for an average of 57% of the KLM total mortality (Figure 2.10; Appendix C15) and 58% of the ATN total mortality (Figure 2.10; Appendix C2) across the entire mortality distribution time series which began in 1985 for KLM and 1990 for ATN. The average mortality in the escapement increased to 64% in KLM and slightly decreased to 55% in ATN during 1999–2013. Most of the remaining mortalities in KLM are associated with catch and IM in the SEAK AABM troll (1999–2013 average: 12%) and the NBC AABM sport (1999–2013 average: 6%) fisheries. NBC AABM troll and ISBM Canada net fisheries used to be important mortality components for KLM during 1979–1984 with 19% (AABM troll) and 25% (ISBM terminal net) of the total mortality but their relevance diminished to approximately 2% (AABM troll) and 4%, (ISBM terminal net) during 1999–2013. In the case of ATN, most of the fishing mortality was associated with catch and IM in the SEAK AABM troll (1999–2013 average: 9%), the NBC AABM sport (1999–2013 average: 3%), the NBC AABM troll (1999–2013 average: 3%), and the ISBM terminal fisheries (1999–2013 average: 26%).

There are essentially no strays in KLM and only a small average percentage (1999–2013) of 0.1% in ATN. The largest percentage of the total mortality represented by strays in ATN was 1.4% in 2003.

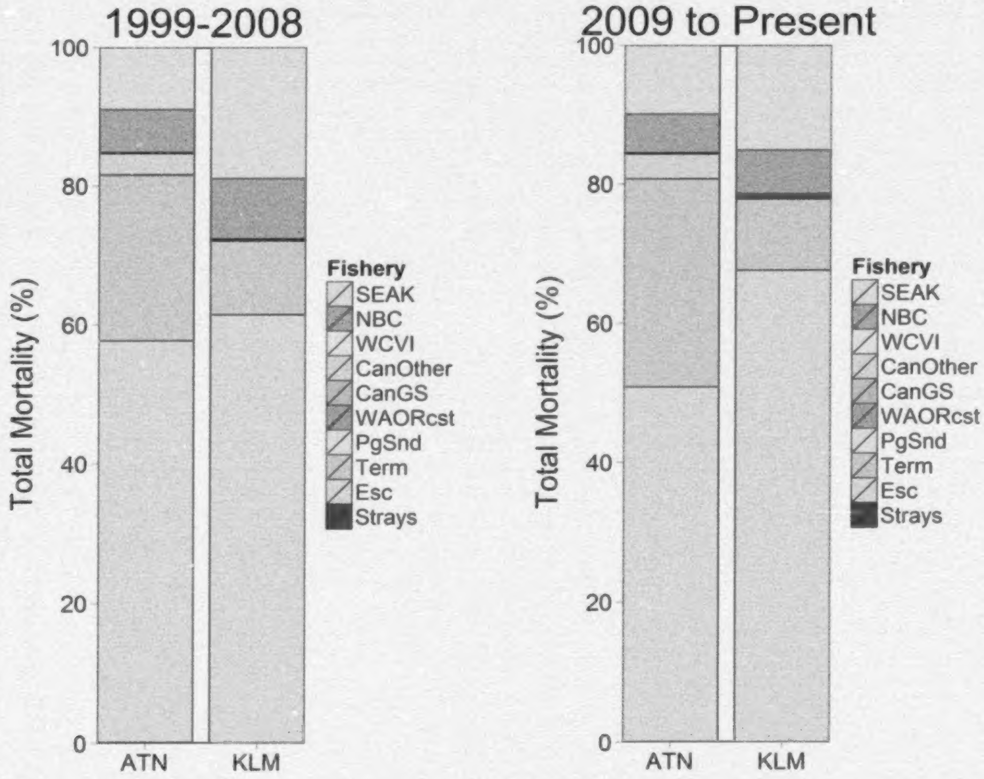


*Figure 2.10 Distribution of total mortality for North and Central BC indicator stocks for the current (2009–present) and previous (1999–2008) agreement periods.*

## 2.2.3 West Coast Vancouver Island Stocks

There is one hatchery CWT indicator stock to represent wild and hatchery WCVI Chinook: Robertson Creek Fall. The Robertson Creek Fall indicator stock (RBT) is composed of tag recoveries from the Robertson Creek hatchery, and it is used to represent the WCVI model stocks RBH (hatchery) and RBT (natural). WCVI Chinook enter the ocean as subyearlings and age 2 is the youngest age recovered. The RBT time series begins in BY 1973 and the latest complete BY is 2008.

### 2.2.3.1 Brood Year Exploitation Rates

The BYER computed for RBT includes only recoveries from ocean fisheries. The BYER for RBT has been decreasing from approximately 77% for BY 1973 to approximately 30% for BY 2008 (Figure 2.11). Not including BY 1992, which was characterized by zero recoveries in the catch as a result of the poorest survival to age 2 observed for this stock (see next section), BYER for RBT averaged 44% and ranged from 24% for BY 1998 to 77% for BY 1973. The 16% IM experienced by BY 1992 is entirely attributed to CWT recoveries of sublegal fish. The percentage of the RBT BYER that is IM increased exponentially during the first 10 years of the time series from approximately 14% for BY 1973 to 67% for BY 1983. It then decreased substantially to approximately 18% for BY 1985, then increased exponentially again for the following six BYs to approximately 58% for BY 1991. The variation in the percentage of the RBT BYER that is IM subsided after BY 1992. The percentage of the RBT BYER that is IM averages approximately 28% for the entire time series.

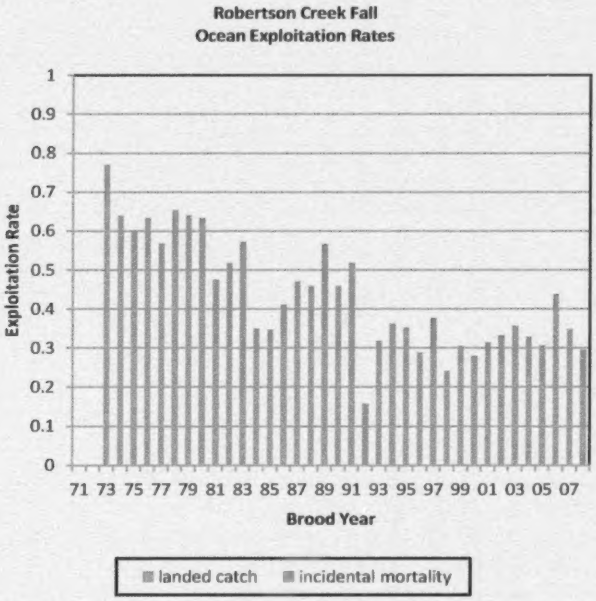
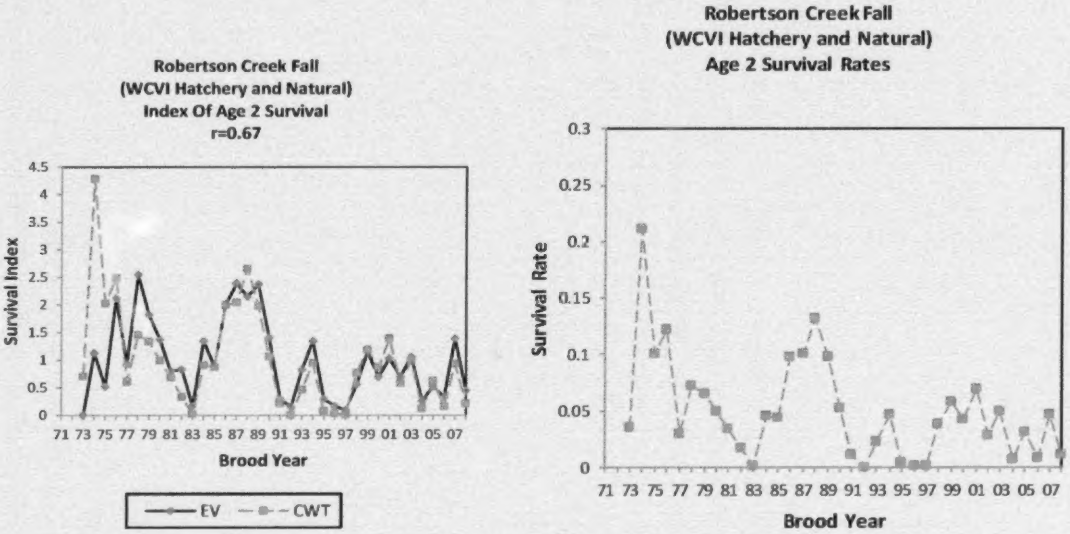


*Figure 2.11 Brood year ocean exploitation rates for Robertson Creek Fall. Catch and incidental mortality are shown. Only completed brood years are included.*

### 2.2.3.2 Survival Rates

The survival rate of RBT is survival to age 2 because the fish enter the ocean as subyearlings. The RBT survival rates show a general declining trend, averaging 4.9% and ranging from around 0.02% for BY 1992 to 21.1% for BY 1974, with a survival rate of 1.0% for the last complete BY (Figure 2.12). In addition to BY 1992, BYs 1983, 1995, 1996, and 1997 have also experienced extremely low survival rates. The EV index and the survival index are moderately correlated with r = 0.67.


Robertson Creek Fall
(WCVI Hatchery and Natural)
Index Of Age 2 Survival
r=0.67

Robertson Creek Fall
(WCVI Hatchery and Natural)
Age 2 Survival Rates

*Figure 2.12 CWT survival and EV indices and survival rate for Robertson Creek Fall. r: Pearson correlation coefficient between CWT and EV survival indices.*

### 2.2.3.3 Mortality Distributions

An average of 37% of the RBT total mortality (Figure 2.13; Appendix C28) occurred in the escapement during 1979–2013. The RBT average mortality in the escapement increased to 45% during 1999–2013. Most of the remaining mortalities in this stock are associated to catch and IM in the SEAK AABM troll (1999–2013 average: 12%), ISBM terminal net (1999–2013 average: 12%) and sport (1999–2013 average: 11%) fisheries. The NBC AABM troll fishery used to be an important mortality component for RBT during 1979–1995, with 9–12% of the total mortality, but its relevance diminished to approximately 3% during 1999–2013. The ISBM Canada net fishery was also an important RBT mortality component during 1979–1984 with around 6% of the total mortality, but its contribution effectively became 0% during 1999–2013.

Strays make only a small percentage (0.2% during 1979–2013) of the total mortality in RBT. The largest percentage of the total mortality represented by strays in RBT was 0.9% in 2009.

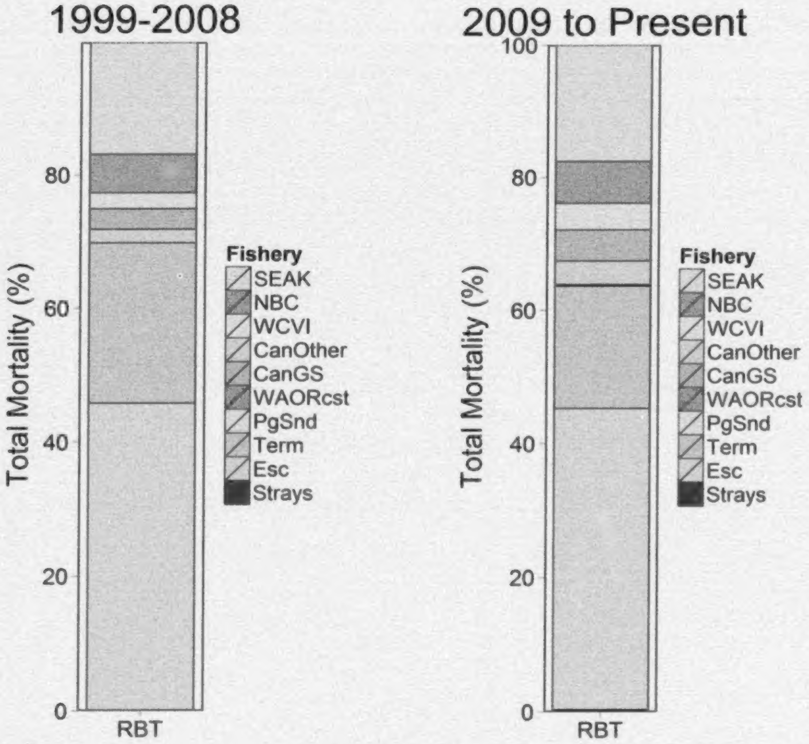


*Figure 2.13 Distribution of total mortality for the WCVI indicator stock (Robertson) for the current (2009–present) and previous (1999–2008) agreement periods.*

## 2.2.4 Strait of Georgia Stocks

Strait of Georgia model stocks are segregated into Upper Strait of Georgia (GSQ) and Lower Strait of Georgia (GST for wild Chinook and GSH for hatchery Chinook). There is one hatchery CWT indicator stock for Upper Strait of Georgia (Quinsam [QUI]), two for Lower Strait of Georgia Natural (Cowichan [COW] and Nanaimo [NAN]), and two for Lower Strait of Georgia Hatchery (Puntledge [PPS] and Big Qualicum [BQR]). QUI is composed of tag recoveries from the Quinsam Hatchery. COW and NAN are composed of tag recoveries from the Cowichan and Nanaimo hatcheries while PPS and BQR are composed of tag recoveries from the Puntledge and Big Qualicum hatcheries. Strait of Georgia Chinook enter the ocean as subyearlings and age 2 is the youngest age at which CWTs are recovered. The QUI time series begins in BY 1974, COW in 1985, NAN in 1979, PPS in 1975, and BQR in 1973. NAN time series not only starts later than the other Strait of Georgia stocks but also exhibits several gaps.

### 2.2.4.1 Brood Year Exploitation Rates

The BYERs computed for Strait of Georgia stocks include recoveries from ocean fisheries and terminal fisheries. There is a general declining tendency for BYERs of the indicator stock for Upper Strait of Georgia (Figure 2.14) as well as for most of the indicator stocks for Lower Strait of Georgia (Figure 2.15). The BYER for QUI has decreased from approximately 71% in 1974 to approximately 40% in 2007, averaging 58% and ranging from 30% for BY 2004 to 85% for BY 1977 (Figure 2.14). The percentage of the QUI BYER that is IM increased consistently during the first 17 years of the time series reaching 54% for BY 1991, and then decreasing substantially to average levels for subsequent BYs. Similar exploitation rate patterns occurred for all Lower Strait of Georgia indicator stocks, except for COW (Figure 2.15) for which BYERs generally decreased from BY 1985 to BY 1995, and generally increased in subsequent BYs. COW BYER averaged approximately 70% and ranged from 38% for BY 1995 to 89% for BY 1985. The percentage of the COW BYER that is IM increased consistently during the first 11 years of the time series reaching 45% for BY 1995, and averaged approximately 31% for the entire time series. BYERs of the other three Lower Strait of Georgia indicator stocks, BQR, NAN, and PPS, decreased from exploitation rate levels of 80–90% to exploitation rate levels of 35–45%. The lowest BYERs for these stocks were experienced by BY 2007 in BQR (33%), by BY 2004 in NAN (37%), and by BY 1998 in PPS (12%). The percentage of the BYER that is IM in these three stocks increased consistently during the first 15–20 years of the time series and averaged 22% in BQR, 33% in NAN, and 23% in PPS.

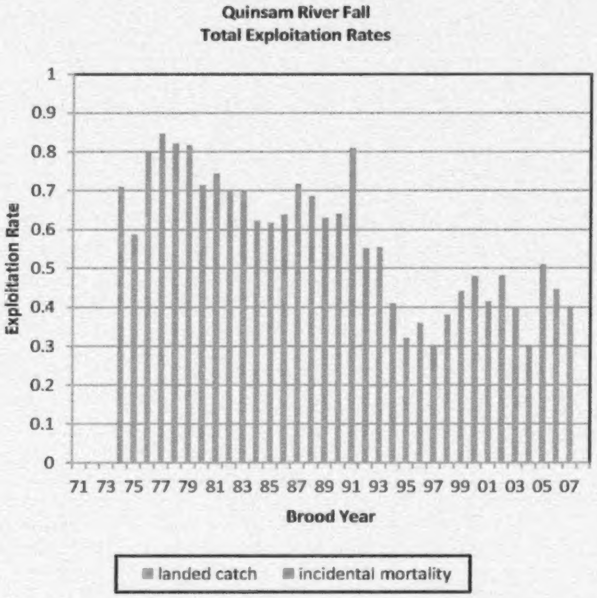


*Figure 2.14 Total brood year exploitation rate for Quinsam River Fall. Catch and IM are shown. Only completed brood years are included.*

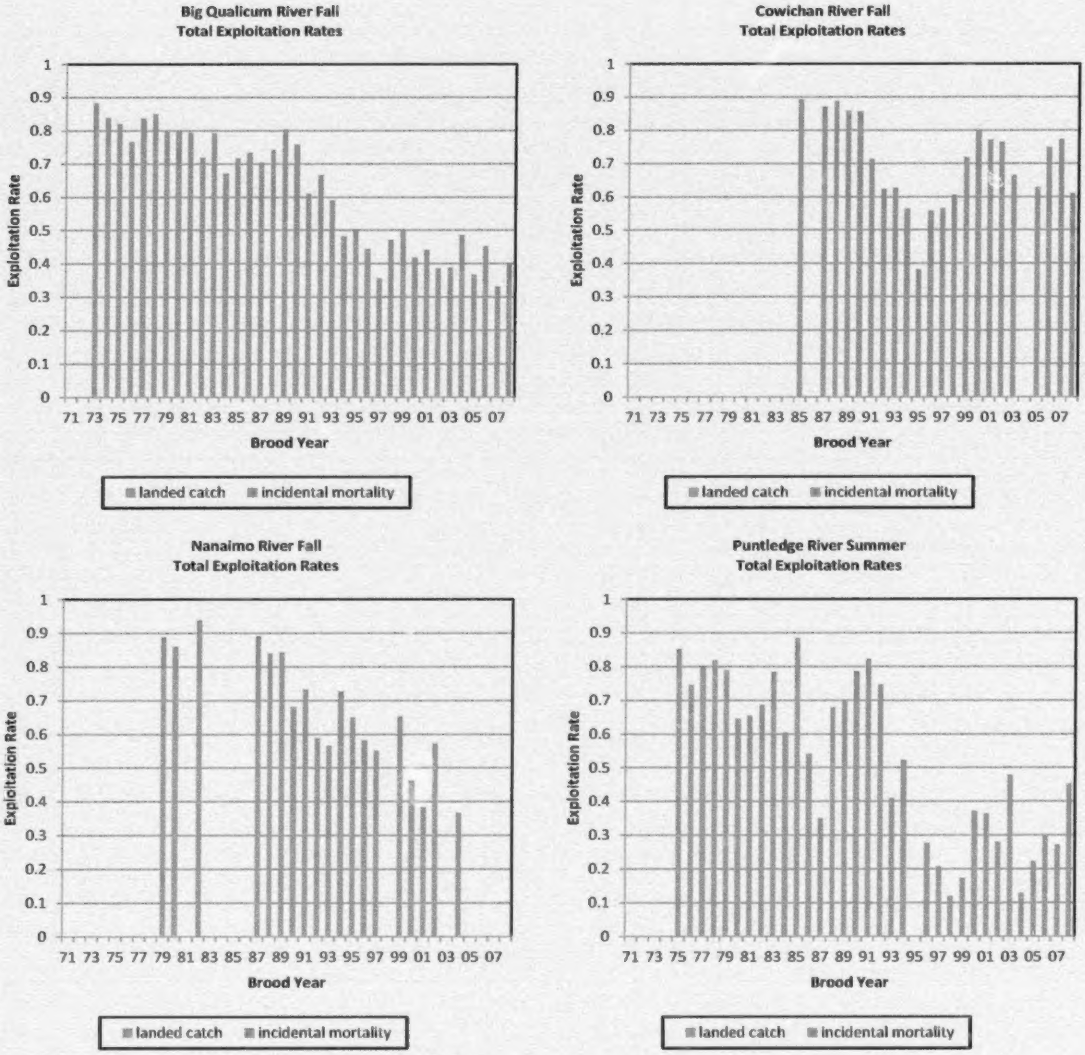


*Figure 2.15 Total brood year exploitation rate for Lower Strait of Georgia stocks. Catch and incidental mortality are shown. Only completed brood years are included.*

### 2.2.4.2 Survival Rates

The survival rates of Strait of Georgia CWT indicator stocks represent survival to age 2 because fish enter the ocean as subyearlings. All these stocks show a clear declining trend in survival rates and moderate correlations between survival and EV indices, except for NAN with a correlation coefficient of 0.39. The QUI survival rates have averaged 2.2% and ranged from around 0.2% for BY 2006 to 9.3% for BY 1976 (Figure 2.16). In the case of Lower Strait of Georgia CWT indicator stocks, BQR survival rates have averaged 2.6% with a range of approximately 0.1–25.6% (the highest observed for Strait of Georgia stocks), COW survival rates have averaged 2.0% with a range of approximately 0.3–7.0%, NAN survival rates have averaged 3.0% with a range of approximately 0.6–13.6%, and PPS survival rates have averaged 1.2% with a range of approximately 0.1–12.8% (Figure 2.17). The survival rate for the last completed brood of the time series was 0.7% for QUI, 0.6% for BQR, 0.9% for COW, 3.0% for NAN, and 0.6% for PPS.

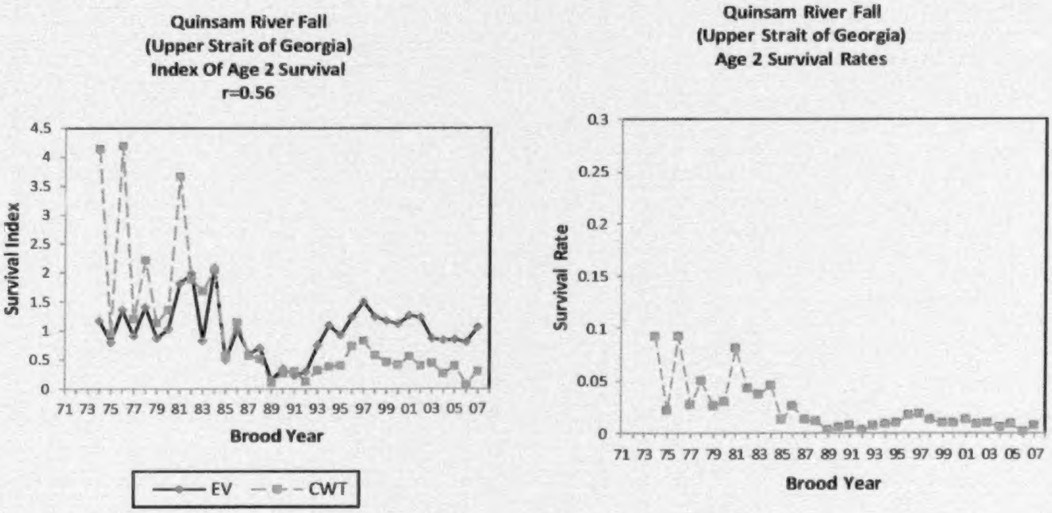


*Figure 2.16 CWT survival and EV indices and survival rate for Quinsam River Fall. r: Pearson correlation coefficient between CWT and EV survival indices.*

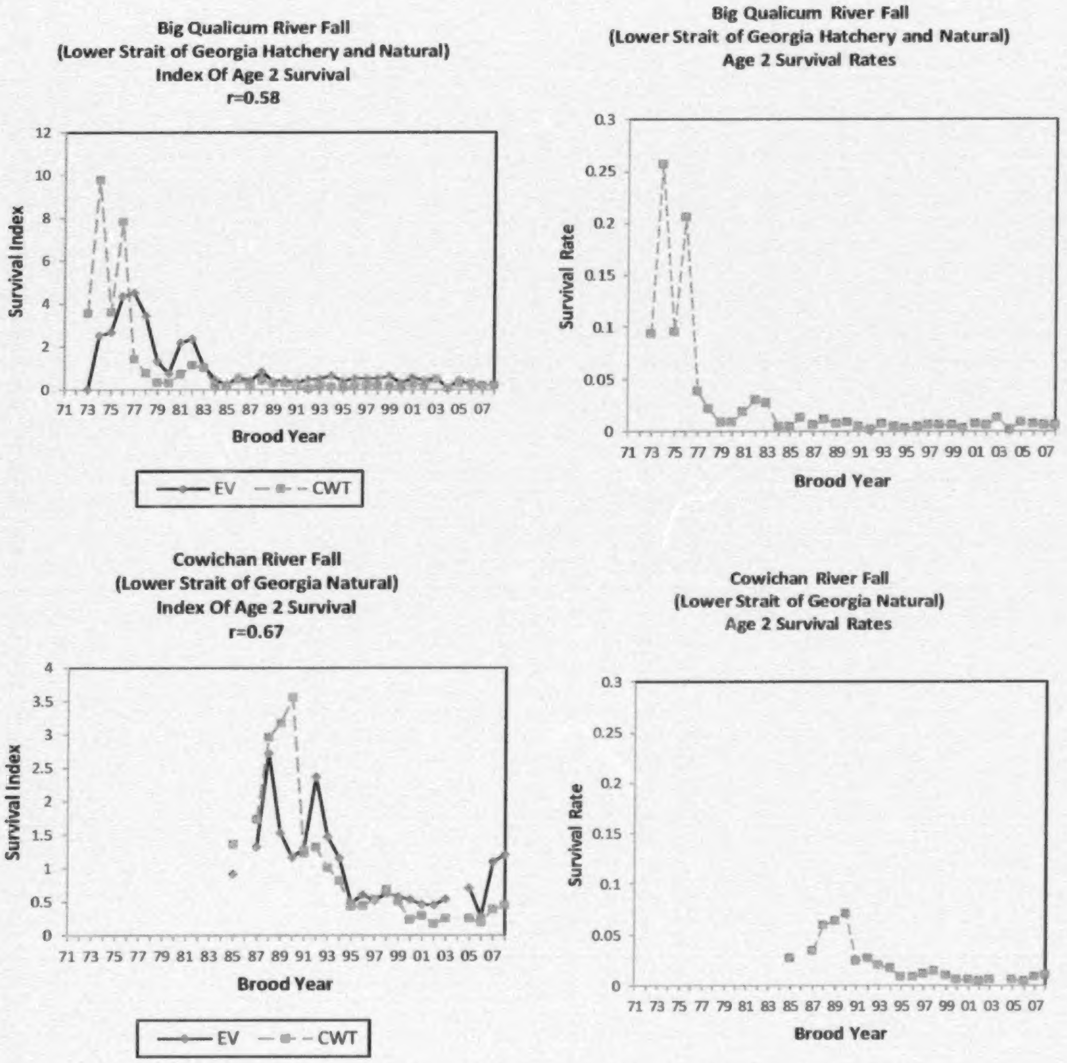


*Figure 2.17 CWT survival and EV indices and survival rate for Lower Strait of Georgia stocks. r: Pearson correlation coefficient between CWT and EV survival indices.*

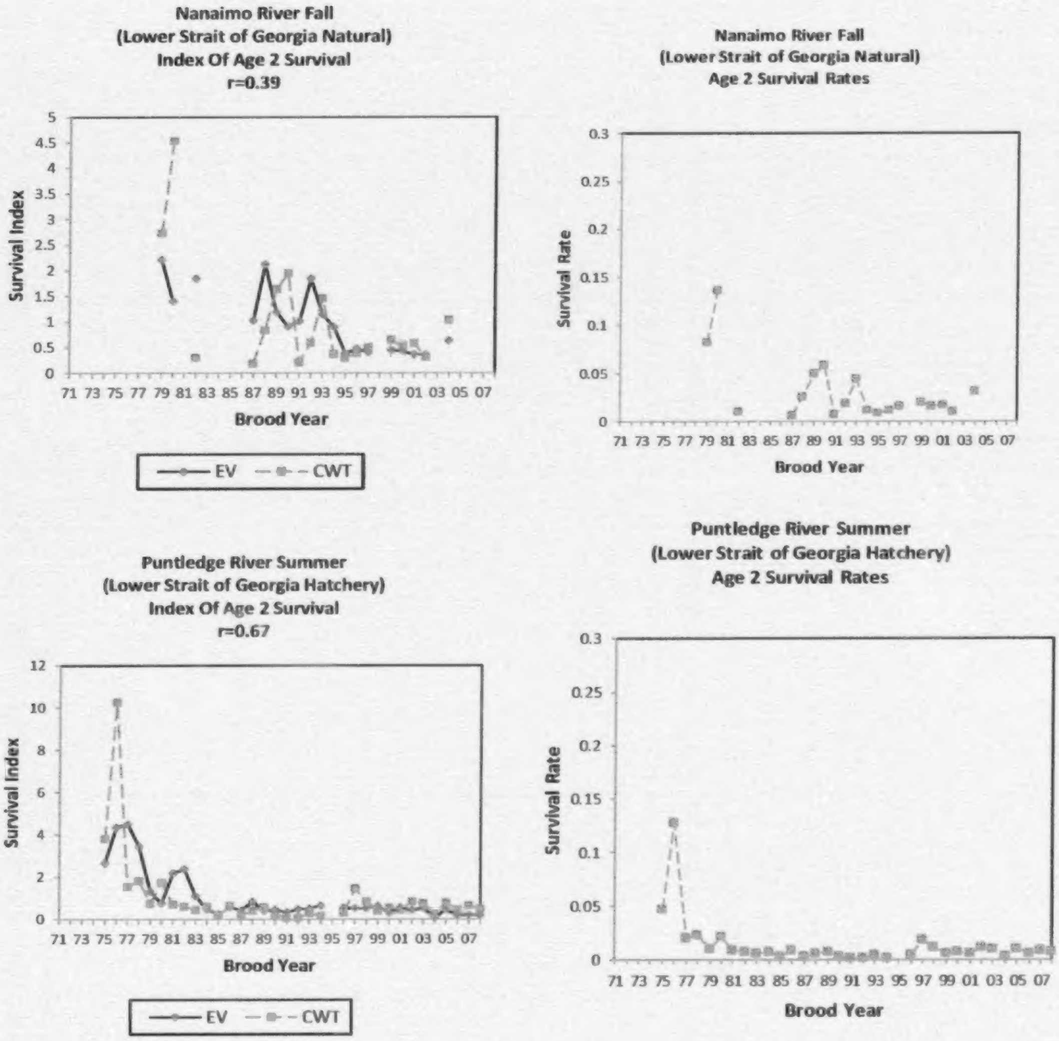


*Figure 2.17 Page 2 of 2.*

### 2.2.4.3 Mortality Distributions

Total mortality in the Upper Strait of Georgia indicator stock QUI (Figure 2.18; Appendix C26) averaged 45% in the escapement during 1979–2013, and increased to 60% during 1999–2013. Most of the remaining mortalities in this stock are associated with catch and IM in the SEAK AABM troll (1999–2013 average: 14%), SEAK AABM net (1999–2013 average: 5%) and Canada ISBM sport (1999–2013 average: 16%) fisheries. The NBC AABM troll, ISBM Central troll and ISBM Canada troll fisheries used to be important mortality components for QUI during 1979–1995 with 7–10% of the total mortality in NBC AABM troll, 5–10% in ISBM Canada Central, and 16–22% in ISBM Canada net. Average Chinook salmon mortality in these fisheries diminishes during 1999–2013 to approximately 1% for NBC AABM troll, 0% for the ISBM Central troll, and 1% for the ISBM Canada net.

Strays make only a small percentage (0.2% during 1979–2013) of the total mortality in QUI. The largest percentage of the total mortality represented by strays in QUI was 1.1% in 1999. In BQR, strays make 0.8% of the total mortality during 1979–2013. The largest percentage of the total mortality represented by strays in BQR was 2.4% in 1998. COW showed the largest percentage of the total mortality represented by strays (3.1% during 1990–2013), with percentages of the total mortality as high as 10.0% in 2009. Strays also represented a significant percentage of the total mortality in NAN (2.0% during 1991–2006). The largest percentage of the total mortality represented by strays in NAN was 4.6% in 2004. In PPS, strays make only a small percentage (0.4% during 1979–2013) of the total mortality. The largest percentage of the total mortality represented by strays in PPS was 6.5% in 2003.

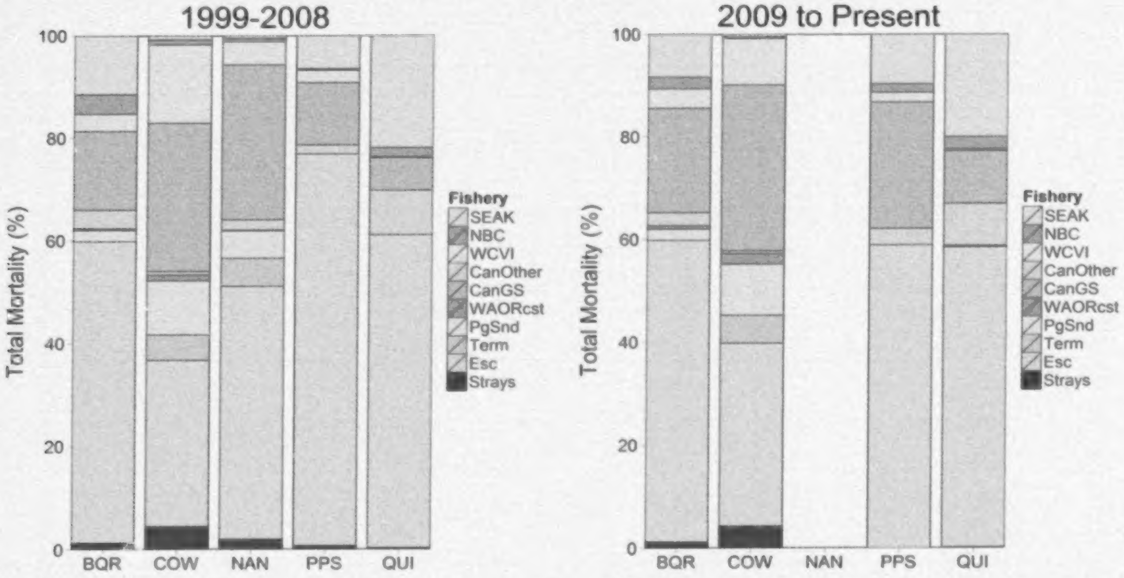


*Figure 2.18 Distribution of total mortality for upper and Lower Strait of Georgia indicator stocks for the current (2009–present) and previous (1999–2008) agreement periods.*

Among the Lower Strait of Georgia indicator stocks, an average of 42% of the BQR total mortality (Figure 2.18; Appendix C3), 32% of the COW total mortality (Figure 2.18; Appendix C6), 39% of the NAN total mortality (Figure 2.18; Appendix C20), and 52% of the PPS total mortality (Figure 2.18; Appendix C25) occurred in the escapement during 1979–2013 (note that COW mortality distribution time series begins in 1990 and that of NAN is truncated to 1984–2006). During 1999–2013, the average mortality in the escapement increases to 59% in BQR, to 33% in COW, to 49% in NAN, and 70% in PPS. Most of the remaining mortalities in BQR are associated to catch and IM in the ISBM Strait of Georgia sport (1999–2013 average: 17%) and the SEAK AABM troll (1999–2013 average: 8%). The ISBM Canada net and troll fisheries used to be important mortality components for BQR during 1979–1995 with 10–15% (net) and 3–8% (troll) of the total mortality but their relevance diminishes to less than 1% during 1999–2013.

The ISBM Strait of Georgia troll fishery was also important during 1979–1984, averaging 15% of the BQR total mortality, but its contribution becomes effectively 0% during 1999–2013. In the case of COW, total fishing mortality is dominated by the ISBM Strait of Georgia sport fishery (1999–2013 average: 30%), but the WCVI AABM troll (1999–2013 average: 8%), the WCVI AABM sport (1999–2013 average: 5%), the ISBM Puget Sound net (1999–2013 average: 7%), and the ISBM terminal net (1999–2013 average: 5%) fisheries are also important COW mortality components. The ISBM Strait of Georgia troll fishery used to be an important mortality component for COW during 1985–1995, averaging 9% of the total mortality, but its contribution becomes effectively 0% during 1999–2013. Similar to COW, most of NAN fishing mortality has been dominated by the ISBM Strait of Georgia sport fishery (1984–2006 average: 30%). ISBM Canada net and troll fisheries were important mortality components for NAN in the past with 19% (net) and 13% (troll) of the total mortality in 1979–1984, but their relevance diminished to mortality levels of 0.3% (net) and 0% (troll) during 1999–2006. Lastly, most of PPS fishing mortality is associated with catch and IM in the ISBM Strait of Georgia sport (1999–2013 average: 16%) and the SEAK AABM troll (1999–2013 average: 6%) fisheries. ISBM Strait of Georgia troll and ISBM Canada troll and net fisheries used to be important mortality components for PPS during 1979–1984 with 13% of the total mortality associated to ISBM Strait of Georgia troll, 10% to ISBM Canada troll, and 12% to ISBM Canada net. During 1999–2013, their relevance diminished to mortality levels of 0% for both the ISBM Strait of Georgia troll and the ISBM Canada troll fisheries, and less than 1% for ISBM Canada net fisheries.

### 2.2.5 Fraser Stocks

Fraser River Chinook have been represented by two model stocks, Fraser Early (FRE), and Fraser Late (FRL). The CWT indicator stocks for Fraser Early represent different combinations of run type and life history. There are two hatchery CWT indicator stocks for Fraser Late (Chilliwack [CHI] and Harrison [HAR]), two for Fraser Early Spring-run type (Nicola [NIC; age 1.2] and Dome [DOM; age 1.3]), and two for Fraser Early subyearling Summer-run type (Lower Shuswap [SHU; age 0.3]; Middle Shuswap [MSH; age 0.3]). There is no CWT indicator for Fraser Early yearling Summer-run type and DOM was discontinued after the 2002 BY. CHI is composed of tag recoveries of the Chilliwack River fall stock released from the Chilliwack Hatchery whereas HAR is composed of tag recoveries of the Harrison River stock released from the Chehalis Hatchery. NIC is composed of tag recoveries of the Nicola River stock released from the Spius Creek hatchery and DOM is comprised of releases of Dome Creek stock from the Penny Hatchery. SHU is composed of tag recoveries of Lower Shuswap River Chinook and MSH is composed of tag recoveries of Middle Shuswap River Chinook, both of which are released from the Shuswap Falls Hatchery. Fraser Late (Fall) enter the ocean as subyearlings and age 2 is the youngest age at which CWTs are recovered. Fraser Early includes stocks that enter the ocean as subyearlings and stocks that enter the ocean as yearlings. The SHU stock are summer Chinook, entering the ocean as subyearlings, whereas the NIC and DOM stocks are spring Chinook, entering the ocean as yearlings with age 3 as the youngest age at which CWTs are recovered. The time series of recoveries for Fraser Late stocks CHI and HAR starts with BY 1981, the time series of DOM begins with BY 1986, NIC with BY 1985, SHU with BY 1984 and MSH with BY 2008. Unlike the other Fraser River stocks with time series ending with BY 2008, the last completed BY for DOM is 2002.

Since only two completed BYs are available for MSH, information on mortality distribution only is reported for this stock in the following sections.

### 2.2.5.1 Brood Year Exploitation Rates

The BYERs computed for Fraser River stocks include recoveries from ocean fisheries and terminal fisheries within the Fraser River and tributaries. BYERs for the Fraser Late indicator stocks have a declining tendency over their time series (Figure 2.19). In the Fraser Early indicator stocks, BYER was increasing for DOM when that program was discontinued (last completed BY 2002); however, no clear trend is apparent for NIC and SHU (Figure 2.20). Between BY 1981 and BY 2008, the BYERs decreased from approximately 72% to 30% for CHI and from approximately 86% to 32% for HAR. CHI BYER averaged 44% and ranged from 23% for BY 2002 to 83% for BY 1982, whereas HAR BYERs averaged 52% and ranged from 20% for BY 1995 to 91% for BY 1982.

Within BYERs, the percentage of the BYER represented by IM for CHI averaged 21% and increased consistently during the first 15 years of the time series, reaching 32% for BY 1995, and then decreased substantially to average levels for subsequent BYs. Similarly, the percentage of the HAR BYER that results from IM also averaged 21% and increased consistently during the first 15 years of the time series, reaching 38% for BY 1995, and then decreased substantially to average levels for subsequent BYs.

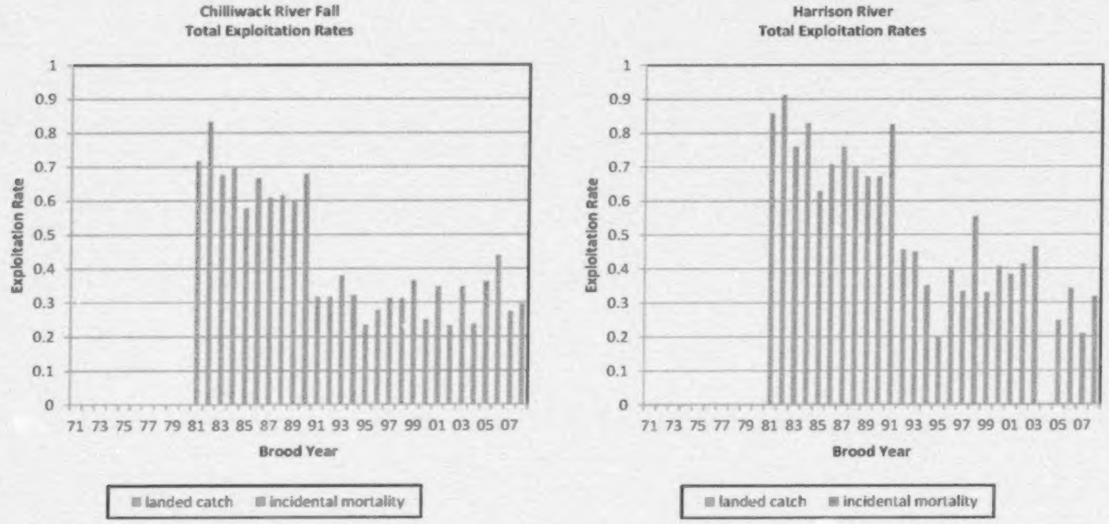


*Figure 2.19 Total brood year exploitation rate for Fraser Late stocks. Catch and incidental mortality are shown. Only completed brood years are included.*

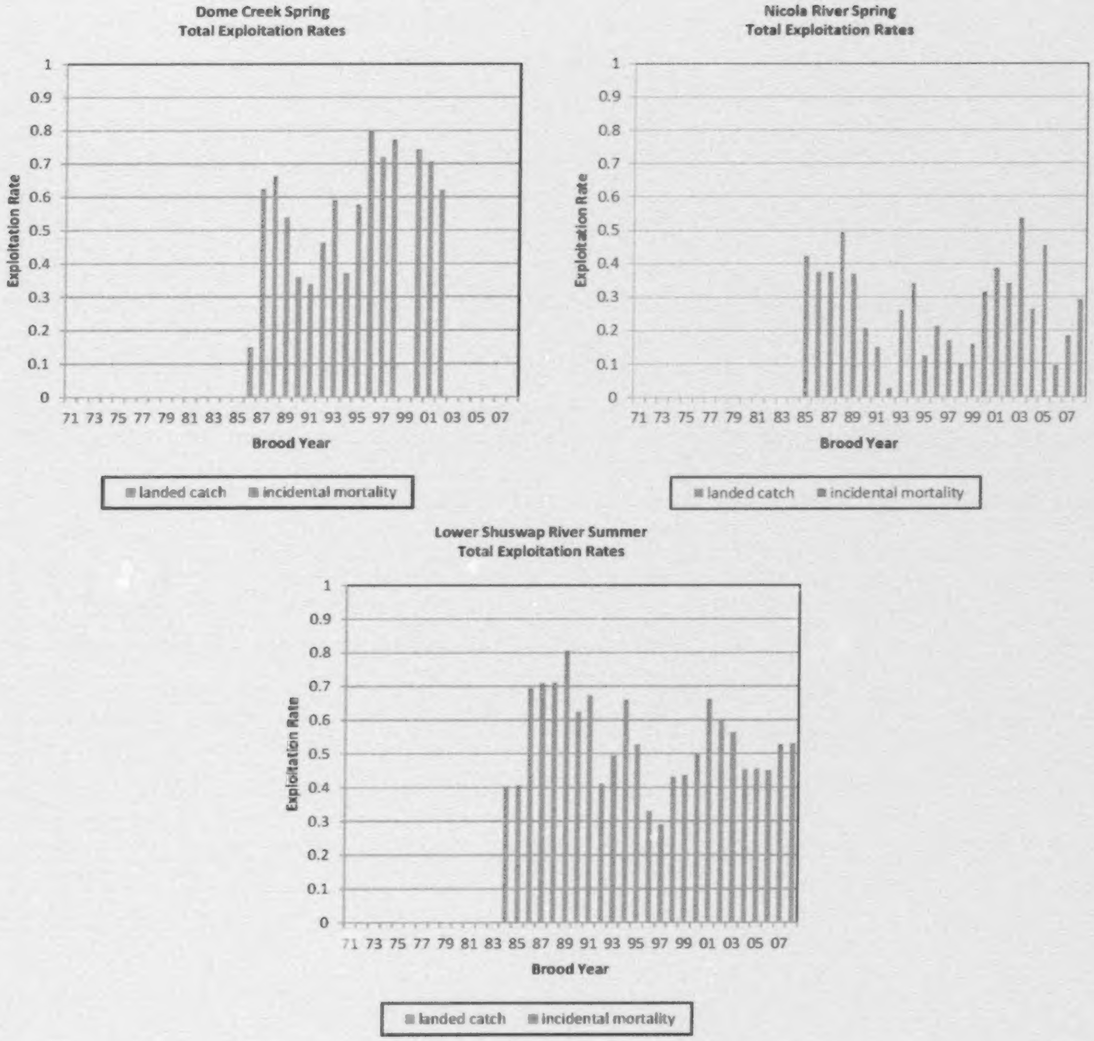


*Figure 2.20 Total brood year exploitation rate for Fraser Early stocks. Catch and incidental mortality are shown. Only completed brood years are included.*

Exploitation rate patterns differed for the three indicator stocks representing Fraser Early. DOM BYER averaged approximately 56% and ranged from 15% for BY 1986 to 80% for BY 1996. The percentage of the DOM BYER that is attributed to IM remained relatively stable, averaging approximately 8% for the entire time series, and reached its lowest values for BYs 1988 (3%) and 2000 (0.5%). Not including BY 1992, for which there were no recoveries in the catch, likely as a result of the poorest survival observed for this stock (see next Section), NIC BYERs are the lowest among Fraser River and all other Canadian CWT indicator stocks. Estimated BYERs for NIC averaged approximately 29%, and ranged from approximately 10% for BY 2006 to approximately 49% for BY 1988. The estimates of IM remained relatively stable, averaging approximately 10% for the entire time series, and ranging from 3% for BY 2003 to 24% for BY 1993. Lastly, BYER for SHU averaged approximately 53%, and ranged from 29% for BY 1997 to 71% for BY 1988. SHU BYER IM has remained relatively stable, averaging approximately 20% for the entire time series and ranging from 13% for BY 1990 to 37% for BY 1992.

### 2.2.5.2 Survival Rates

Estimated survival rates for CHI, HAR, and SHU represent survival to age 2 because juveniles from those stocks enter the ocean as subyearlings. Estimated survival rates for DOM and NIC represent survival to age 3 because smolts from those stocks enter the ocean as yearlings and age 3 is the youngest age recovered. If the first BY of the time series for CHI and HAR is removed, there is no apparent trend for the survival rates of Fraser River indicator stocks. Moderate correlations exist between survival and EV indices for CHI and HAR ($r = 0.64$ for the CHI and $r = 0.41$ for HAR). However, correlations between EV and survival indices for Fraser Early indicator stocks are weak ($r \leq 0.30$ for each of the indicators).

For CHI, survival averaged 11.6%, with a range of 1.6–30.4% (the highest observed for any Fraser River stock). Estimated survival rates for HAR averaged approximately 3.5%, and ranged from 0.4% in BY 1981 to a high of 23.6% for BY 1991 (Figure 2.21). For the Fraser Early indicator stocks, DOM survival rates averaged 1.1% and ranged from a low of 0.2% for BY 1994 to 2.5% for BY 1993. NIC survival rates averaged 3.8% with a range of 0.1–14.4%, and the SHU survival rates averaged 3.8% with a range of 0.1–15.6% (Figure 2.22). The survival rate for the last completed brood of the time series was 10.4% for CHI, 2.0% for HAR, 1.6% for NIC, and 1.1% for SHU. DOM has been discontinued, and survival for the last completed BY (2002) was 0.4%.

The strength of the association between the standardized CWT survival indices and the model EVs provides some insights about the representation of the components of specific model stocks. The Fraser Late model stock appears to represent the survival conditions for the CHI more closely than for HAR based on the higher EV survival indices correlation coefficients; this may be a result of the CHI being used to represent the model stock (Figure 2.21). For the Fraser Early model stock, the EVs have a low association with the survival rates for NIC and SHU, but essentially no association with DOM. These low associations for the Fraser Early model stock indicate that one or more aspects of these stocks are poorly represented in the model.

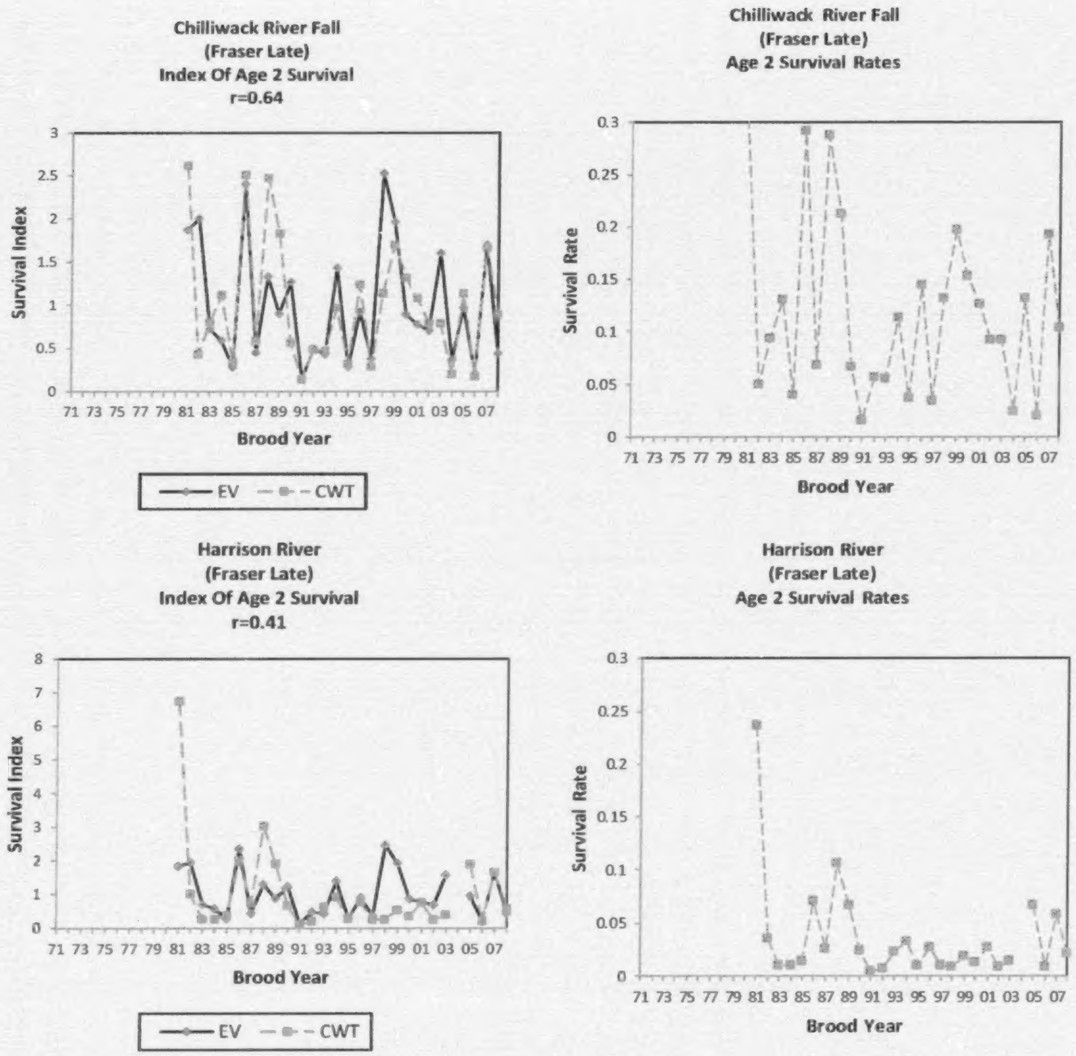


*Figure 2.21 CWT survival and EV indices and survival rate for Fraser Late stocks. r: Pearson correlation coefficient between CWT and EV survival indices.*

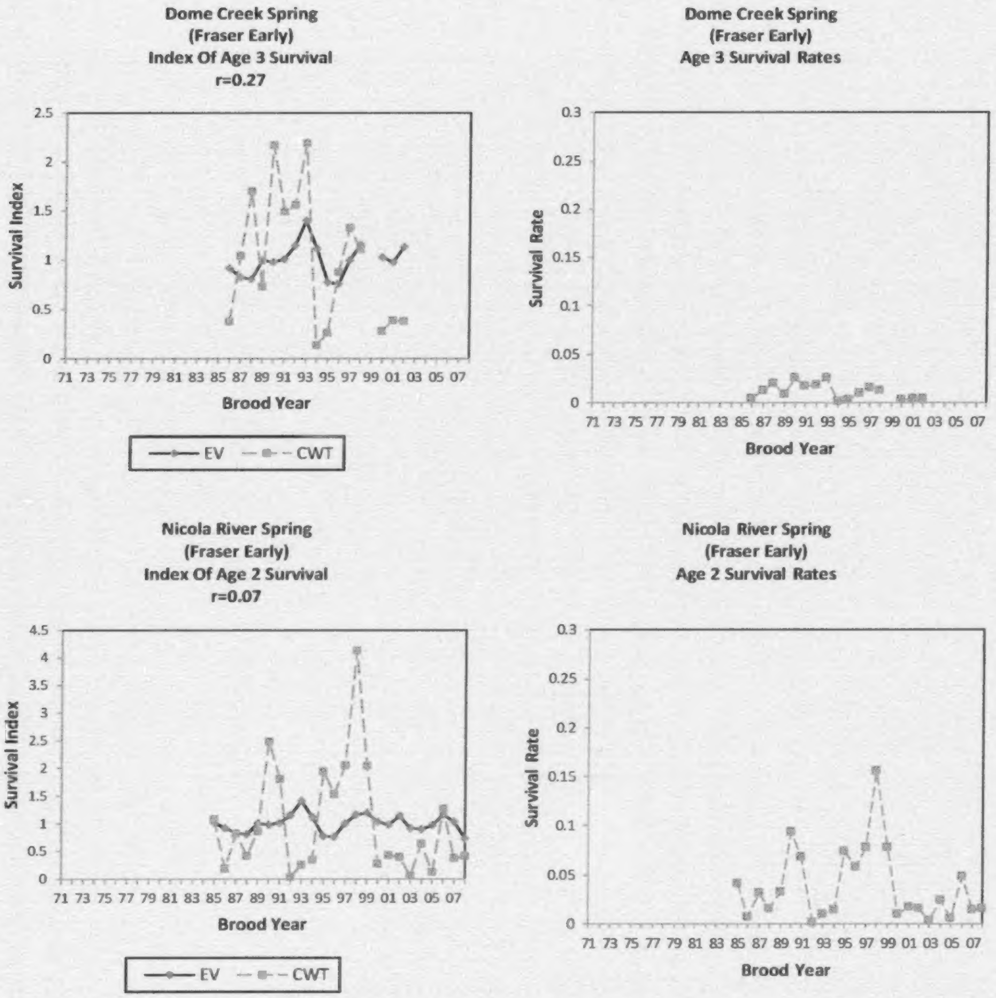


*Figure 2.22 CWT survival and EV indices and survival rate for Fraser Early stocks. r: Pearson correlation coefficient between CWT and EV survival indices.*

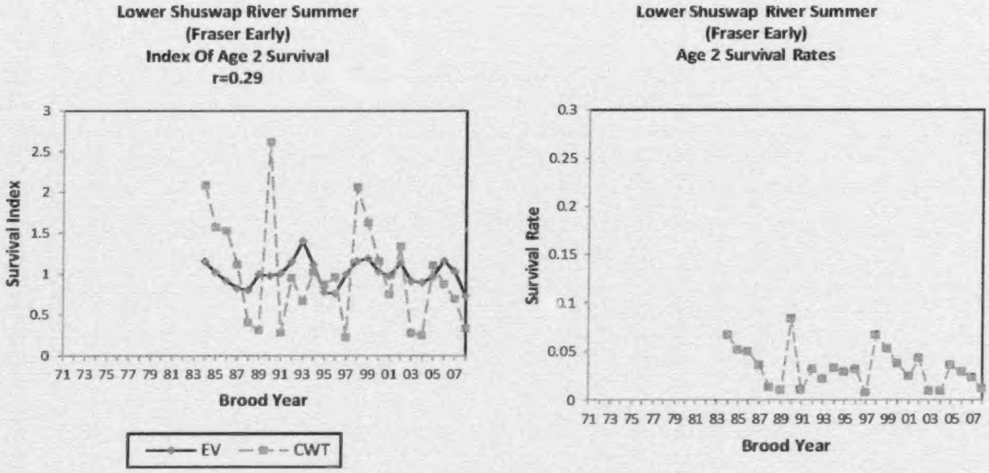


*Figure 2.22 Page 2 of 2.*

### 2.2.5.3 Mortality Distributions

For the Fraser Late indicator stocks, escapement represented an average of 57% of the CHI total mortality (Figure 2.23; Appendix C5) and 51% of the HAR mortality (Figure 2.23; Appendix C13) between 1985 and 2013 (mortality distribution time series for both stocks began in 1985). From 1999 to 2013, the average proportion of mortality represented by escapement increased to 69% for CHI and to 65% for HAR. For the CHI indicator, fishing mortality was attributed to catch and IM in the ISBM terminal sport (1999–2013 average: 7%), the ISBM north of Falcon troll (1999–2013 average: 5%), the ISBM Strait of Georgia sport (1999–2012 average: 6%), and the WCVI AABM troll (1999–2013 average: 5%) fisheries. Between 1985 and 1995, the ISBM Strait of Georgia troll fishery was an important component of the total mortality for CHI (average 6%); however, that fishery for Chinook salmon ceased from 1996 onward. For HAR, most of the fishing mortality is associated with catch and IM in the WCVI AABM troll (1999–2013 average: 9%) and the ISBM WA/OR coast troll (1999–2013 average: 7%) fisheries. The ISBM Strait of Georgia sport fishery used to be an important mortality component for HAR during 1985–1998 with 11–16% of the total mortality, but diminished to average mortality levels of 5% during 1999–2013. There is only limited terminal recreational fishing opportunity on HAR.

Among the Fraser Early indicator stocks, an average of 41% of the DOM total mortality (Figure 2.23; Appendix C8), 71% of the NIC total mortality (Figure 2.23; Appendix C21), and 49% of the SHU total mortality (Figure 2.23; Appendix C30) are represented by escapement during 1988–2012 (note that the DOM mortality distribution time series is truncated to 1991–2006; the NIC time series began in 1989, and SHU series began in 1988). The proportion of the average mortality represented by escapement decreased to 31% for DOM, increased to 75% for NIC and 53% for SHU during 1999–2013 (1999–2007 for DOM). Fishing mortality for DOM was predominantly attributed to catch and IM in the ISBM terminal net fishery (1999–2013 average: 45%), followed by the ISBM Strait of Georgia sport fishery (1999–2013 average: 12%). For NIC, the majority of the total fishing mortality occurred as catch and IM in the ISBM terminal sport

(1999–2013 average: 7%) and the ISBM terminal net (1999–2013 average: 11%) fisheries. From 1996 to 1998, the ISBM Puget Sound sport fishery used to be an important component of the mortality for NIC (averaging approximately 5%); however, that contribution declined to an average of less than 1% during 1999–2013. Lastly, most of the fishing mortality for SHU is associated with catch and IM in the SEAK AABM troll (1999–2013 average: 11%), NBC AABM sport (1999–2013 average: 5%), the NBC AABM troll (1999–2013 average: 7%), and ISBM Strait of Georgia sport (1999–2013 average: 8%) fisheries. ISBM Canada net fisheries outside the Fraser River were also important mortality components for SHU during 1985–1995 (average: 6%); however, that contribution declined to effectively 0% during 1999–2013 although impacts in Fraser River net fisheries have remained relatively consistent over time at around 7%. Strays make an average 1.1% of the total mortality in CHI during 1985–2013. The largest percentage of the total mortality represented by strays in CHI was 5.6% in 2003. In HAR, strays make 0.4% of the total mortality during 1985–2013. The largest percentage of the total mortality represented by strays in HAR was 5.6% in 1995. In DOM, strays make only a small percentage (0.1% during 1991–2006), but strays occurred only in 1998 at 1.6% of the total mortality. Strays also represented a small percentage of the total mortality in NIC (0.1% during 1989–2013). The largest percentage of the total mortality represented by strays in NIC was 1.8% in 1990. Similarly, strays make only a small percentage (0.6% during 1988–2013) of the total mortality in SHU and MSH (2%). The largest percentage of the total mortality represented by strays in SHU was 3.7% in 1993 and it was 2.3% for MSH in 2014.

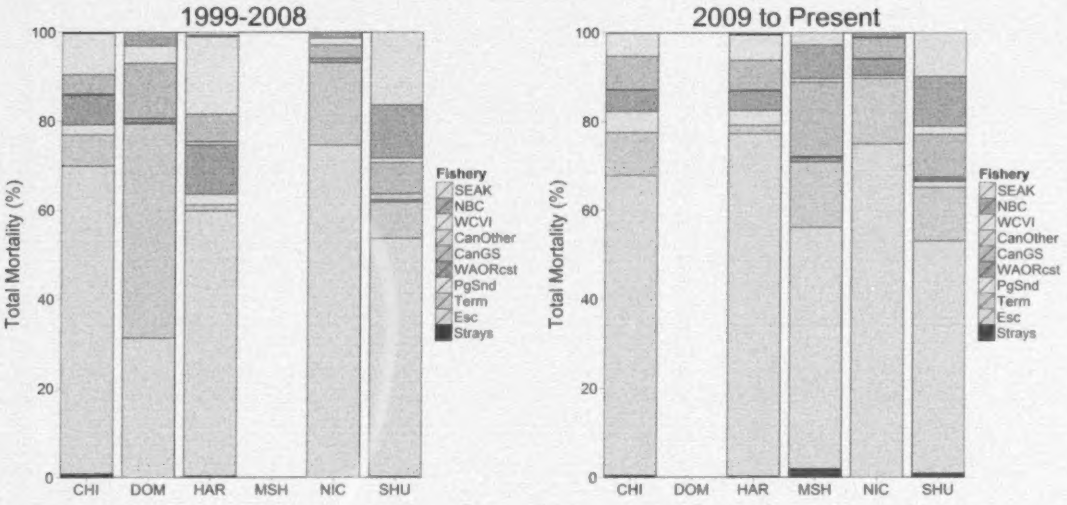


*Figure 2.23 Distribution of total mortality for the Fraser River indicator stocks for the current (2009–present) and previous (1999–2008) agreement periods.*

### 2.2.6 Regional Summary for Canadian Stocks

With exception of the RBT indicator stock, for which BYER represents ocean fishing mortality, BYERs in Canadian indicator stocks represent fishing mortality in both ocean and terminal fisheries. Notwithstanding, Strait of Georgia stocks have experienced the largest BYERs among Canadian indicator stocks with Lower Strait of Georgia natural stocks COW and NAN experiencing the largest average BYERs (greater than 65%). As in most Canadian indicator stocks, BYERs of Strait of Georgia have been generally declining, except for COW, which experienced a 63–77% BYERs for the last four complete BYs. In addition to COW, other Canadian stocks that have experienced increasing BYERs are ATN and DOM, with BYERs for the last complete BY (55% for ATN and 62% for DOM) being greater than their long-term average (Table 2.7). On the other extreme, Fraser Early indicator stock NIC has experienced the lowest BYERs among Canadian indicator stocks with an average of 29% across all complete BYs and 29% BYER for its last complete BY.

Average survival rates to age 2 (to age 3 for KLM and DOM) are 5% or less for all Canadian indicator stocks, except for CHI, which has the largest average survival rate at 11.6% (Table 2.7). CHI also exhibits the largest estimated survival rate (30.4%) for any given BY among all Canadian stocks. Other stocks with BY survival rates greater than 20% are RBT, BQR, and HAR. These high survival rates occurred in all cases in the first few years of the time series. Survival rates for these stocks have clearly subsided relative to those high values. The lowest survival rate for the last complete BY (2007 or 2008) among all Canadian indicator stocks was 0.55% for BQR.

In terms of calendar year statistics for 1999–2013, the average percentage of total mortality occurring in the escapement was greater than 50% for most Canadian indicator stocks. RBT and COW had average escapement percentages of the total mortality lower than 50% during that time period: 45% (RBT) and 33% (COW). NAN and DOM had average percentages of the total mortality occurring in the escapement lower than 50% during the 1999–2008 time period: 49% (NAN) and 31% (DOM). Escapement percentages by calendar year lower than 20% have occurred only in COW, PPS, and DOM. These low escapement percentages of the total mortality took place in 2009 for COW, 2012 for PPS, and 2003 for DOM. In addition to having the second lowest escapement percentage and the lowest in 2012 (17%), PPS exhibits the widest range for this calendar year statistic (15–90%), followed by RBT (20–85%). The largest escapement percentages of the total mortality in 2013 occurred in ATN (70%), HAR (73%), and NIC (85%).

Differences in average escapement percentages of the total mortality between Agreement periods 1999–2008 and 2009–2013 were small in most cases (Table 2.7). Important differences occurred only for PPS and HAR. Average escapement percent decreased from 77% during 1999–2008 to 59% during 2009–2013 in PPS, whereas it increased from 59% to 77% in HAR. In terms of the range in escapement percentages observed during the two Agreement periods, in addition to PPS and HAR for which change in average escapement percent reflects important differences in escapement percent range, SHU experienced a substantially wider escapement percent range during 1999–2008 (35–75%) than during 2009–2013 (50–59%). Nonetheless, SHU's average escapement percentage was similar (53% for 1999–2008, and 52% for 2009–2013) for those two periods.

*Table 2.7 Summary of statistics generated by the 2012 CWT cohort analysis for Canadian indicator stocks by region. Statistics include total mortality (catch plus incidental mortality) brood year exploitation rate (BYER), cohort survival rate to age 2 (age 3 for KLM and DOM), and calendar year (CY) percent distribution of the total mortality in the escapement for Agreement periods 1999–2008 and 2009–present.*

| | | | | | | **CY % Escapement[1]** | | |
|---|---|---|---|---|---|---|---|---|
| | | **BYER (total mortality)** | | **Survival rate** | | **1999–2008** | **2009–current** | |
| **Region** | **Indicator Stock** | Mean (range) | Last complete BY | Mean (range) | Last complete BY | Mean (range) | Mean (range) | Last calendar year |
| North/ Central BC | Kitsumkalum (KLM) | 41% (22–67%) | 33% (2007) | 0.99% (0.15–2.41%) | 0.74% (2007) | 61% (48–69%) | 68% (62–71%) | 69% (2013) |
| | Atnarko (ATN) | 42% (28–61%) | 55% (2007) | 2.22% (0.5–4.86%) | 1.62% (2007) | 58% (41–75%) | 51% (36–70%) | 70% (2013) |
| WCVI | Robertson Creek (RBT) | 44%[2,3] (24–77%) | 30% (2008) | 4.93% (0.02–21.1%) | 1.04% (2008) | 46% (20–85%) | 45% (30–64%) | 64% (2013) |
| Georgia Strait | Quinsam (QUI) | 58% (30–85%) | 40% (2007) | 2.25% (0.16–9.25%) | 0.66% (2007) | 61% (49–78%) | 58% (51–68%) | 68% (2013) |
| | Big Qualicum (BQR) | 62% (33–88%) | 40% (2008) | 2.62% (0.13–25.65%) | 0.55% (2008) | 59% (48–74%) | 59% (49–65%) | 58% (2013) |
| | Cowichan (COW) | 70% (38–89%) | 61% (2008) | 1.98% (0.34–7.05%) | 0.89% (2008) | 32% (21–58%) | 35% (16–49%) | 45% (2013) |
| | Nanaimo (NAN) | 67% (37–94%) | 37% (2004) | 3.0% (0.56–13.6%) | 3.09% (2004) | 49% (34–74%) | NA | 74% (2006) |
| | Puntledge (PPS) | 53% (12–89%) | 45% (2008) | 1.24% (0.09–12.75%) | 0.61% (2008) | 77% (68–90%) | 59% (15–77%) | 64% (2013) |
| Fraser River | Chilliwack (CHI) | 44% (23–83%) | 30% (2008) | 11.64% (1.59–30.42%) | 10.36% (2008) | 69% (60–77%) | 67% (63–75%) | 64% (2013) |
| | Harrison (HAR) | 52% (20–91%) | 32% (2008) | 3.51% (0.4–23.59%) | 2.04% (2008) | 59% (43–81%) | 77% (73–84%) | 73% (2013) |
| | Dome (DOM) | 56% (15–80%) | 62% (2002) | 1.14% (0.15–2.49%) | 0.43% (2002) | 31% (15–44%) | NA | 42% (2006) |
| | Nicola (NIC) | 29%[2] (10–54%) | 29% (2008) | 3.77% (0.12–15.56%) | 1.57% (2008) | 75% (42–89%) | 75% (48–91%) | 85% (2013) |
| | Lower Shuswap (SHU) | 53% (29–81%) | 53% (2008) | 3.2% (0.71–8.37%) | 1.06% (2008) | 53% (35–75%) | 52% (50–59%) | 59% (2013) |

[1] % Escapement is not a measure of performance for the escapement indicator stock(s) associated with a given CWT indicator stock. See CTC (2013) for these details.

[2] Does not include BY 1992 from which there were no CWT recoveries in the catch due to extremely low survival rates

[3] BYER based on ocean exploitation rate; terminal exploitation rate is not included because fishing mortality on hatchery fish does not represent fishing mortality on wild fish.

### 2.2.7 Washington Coast Stocks

Coded wire tagged Chinook salmon are currently released from three separate facilities on the Washington Coast and are used by the CTC to represent natural fall Chinook salmon production in the rivers between the Columbia River in the south to the Strait of Juan de Fuca in the north. Indicator stocks include the Queets River (QUE, released from Quinault Department of Natural Resources Salmon River Hatchery) and Sooes River (SOO, released from the US Fish and Wildlife Service Makah National Fish Hatchery) on the coast, and the Hoko River at the western end of the Strait of Juan de Fuca (HOK, released from Makah's Hoko Falls Hatchery). Additionally, Chinook salmon releases from the Washington Department of Fish and Wildlife (WDFW) Elwha Hatchery (ELW) were formerly used in the annual ERA, but releases of adipose-clipped and CWT

Chinook salmon have been insufficient for analysis since BY 1994. Queets, Sooes, and Hoko indicators share a common life history—they are ocean type (fingerling releases), fall-timed fish with a maximum age at maturity of 6. These three stocks also have extensive historical tagging and recovery coverage (20+ completed BYs), with Hoko and Sooes records starting in 1985 and Queets records starting in 1977.

#### 2.2.7.1 Brood Year Exploitation Rates

BYER patterns for Hoko, Queets, and Sooes are considered in terms total exploitation (ocean and terminal; Figure 2.24; Table 2.8). BYERs for Hoko and Sooes indicator stocks have tracked closely for the entirety of their time series (series mean: Hoko 0.34, Sooes 0.42) with relatively higher values (*ca.* 0.60) being observed for the first two BYs on record (1985–1986), and BYERs varying between *ca*. 0.10 and 0.50 thereafter (most recent [2006] BY: Hoko 0.26, Sooes 0.27). Approximately one quarter of all fishery-related mortality for HOK and SOO is in the form of nonlanded, incidental impacts. Across its 29 complete BY, the total BYER for the Queets indicator stock has averaged 0.61, ranging between 0.37 and 0.82, and displaying no discernible temporal trend. The BYER for the last complete Queets BY (2006) is 0.50.

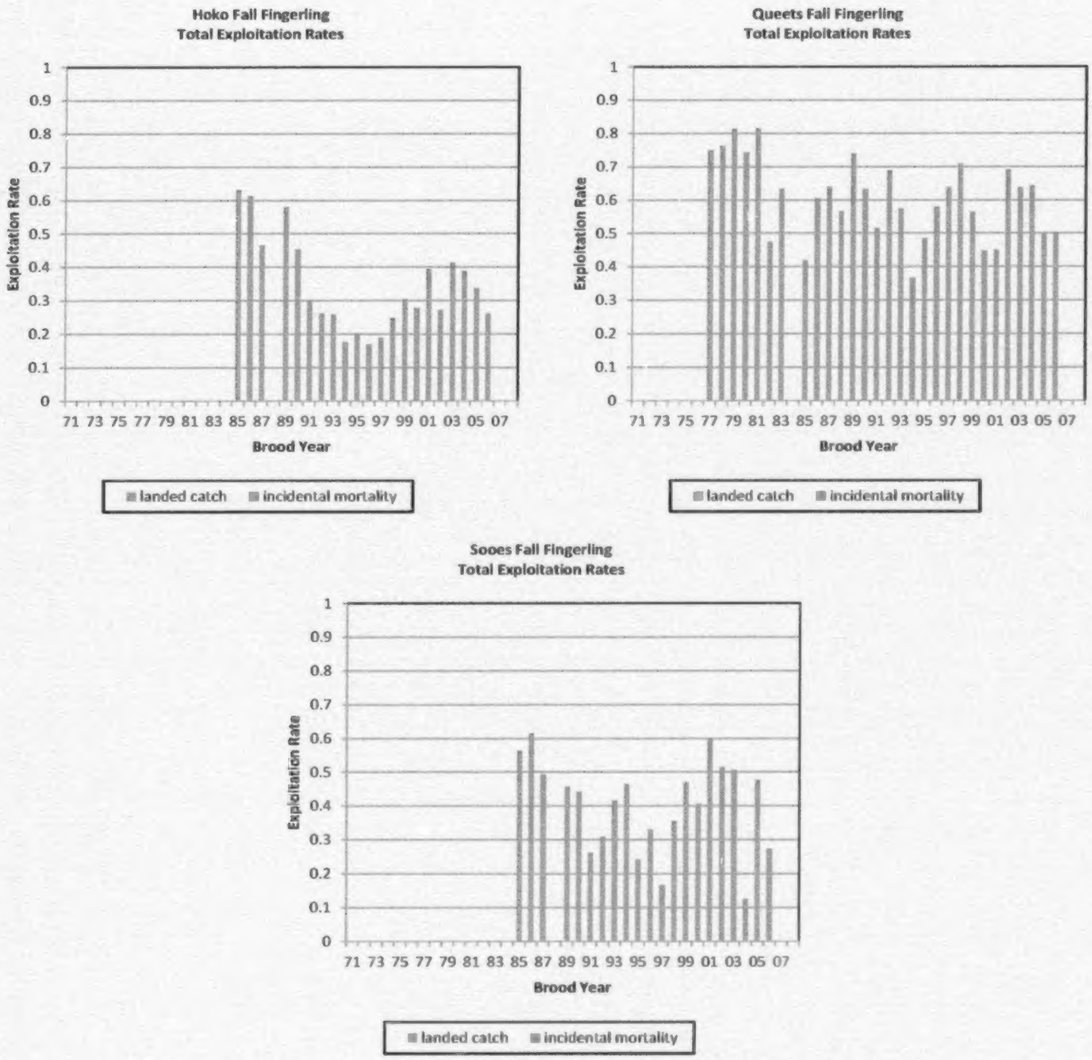


*Figure 2.24 Brood year exploitation rate in terms of landed catch and incidental mortality for Washington coast indicator stocks.*

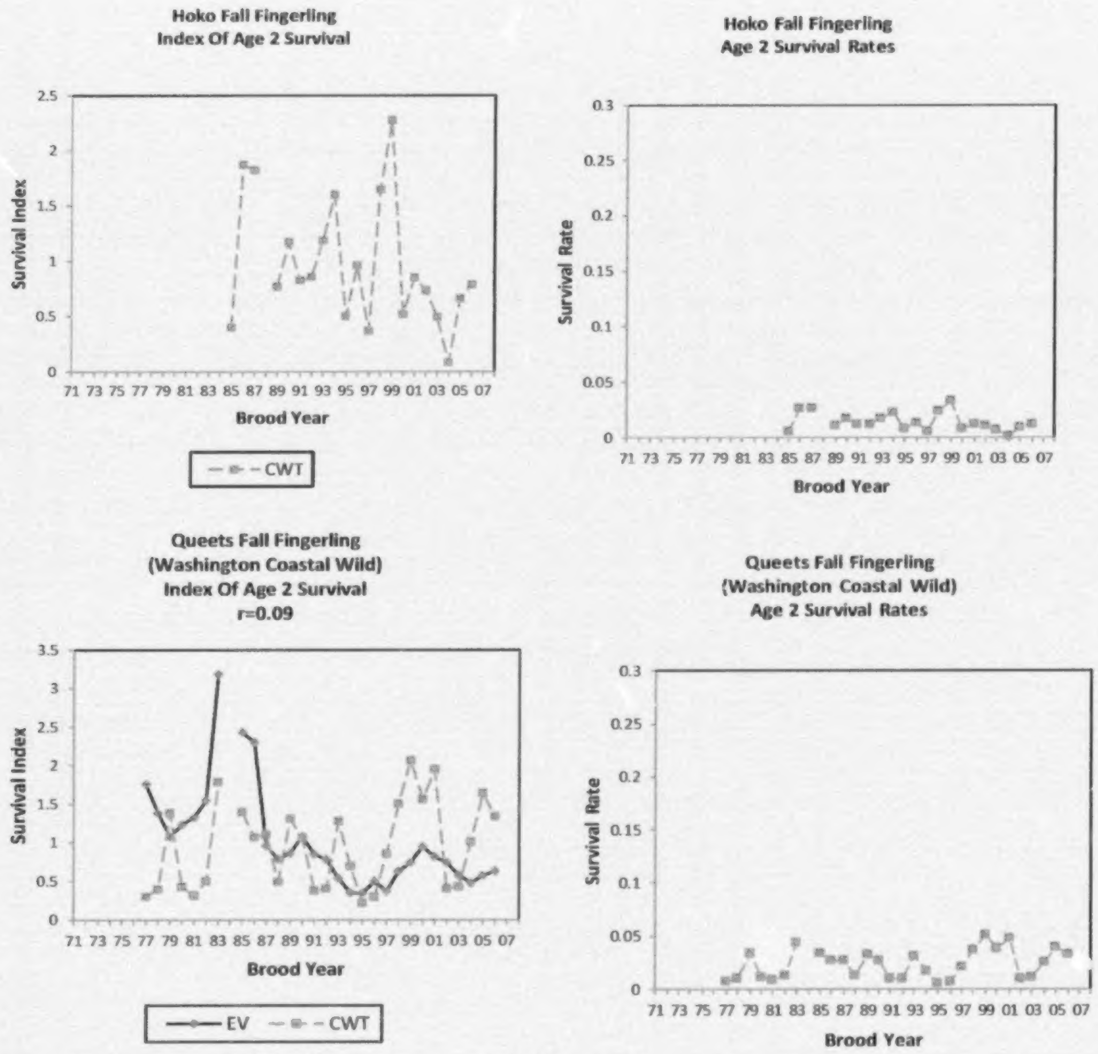
*Table 2.8 Summary of statistics generated by the 2012 CWT cohort analysis for Washington Coast indicator stocks. Statistics include total mortality (catch plus incidental mortality) brood year exploitation rate (BYER), cohort survival rate to age 2, and calendar year (CY) percent distribution of the total mortality in the escapement for Agreement periods 1999–2008 and 2009–present.*

| | | | | | | **CY % Escapement[1]** | | |
|---|---|---|---|---|---|---|---|---|
| | | **BYER (total mortality)** | | **Survival rate** | | **1999–2008** | **2009–present** | |
| **Stock Abbrev.** | **Indicator Stock Name** | **Mean (range)** | **Last complete BY** | **Mean (range)** | **Last complete BY** | **Mean (range)** | **Mean (range)** | **Last CY (if ≠ current)** |
| HOK | Hoko Fall Fingerling | 34% (17–63%) | 26% (2006) | 1.36% (0.12–3.2%) | 1.1% (2006) | 70% (45–88%) | 71% (64–86%) | 65% (2012) |
| QUE | Queets Fall Fingerling | 61% (37–82%) | 50% (2006) | 2.32% (0.53–5.04%) | 3.26% (2006) | 42% (20–70%) | 35% (21–50%) | 21% (2012) |
| SOO | Sooes Fall Fingerling | 42% (17–62%) | 27% (2006) | 0.49% (0.01–1.56%) | 0.12% (2006) | 57% (29–83%) | 69% (64–75%) | 64% (2012) |

[1] % Escapement is not a measure of performance for the escapement indicator stock(s) associated with a given CWT indicator stock. See CTC (2013) for these details.

### 2.2.7.2 Survival Rates

CWT data indicate that release-to-age-2 survival for Chinook salmon on the Washington Coast indicator stocks is highly variable across stocks and years (Figure 2.25; Table 2.8). Sooes Chinook, for instance, consistently experience some of the lowest survivals of any CWT indicator stock evaluated by the CTC. The series-wide mean survival from release to age 2 for this stock is 0.5%, but it has ranged more than two orders of magnitude (0.01–1.5%). The Queets Chinook indicator stock exhibits the highest survival rates among the three indicator stocks, with a range of 0.5–5.0%, and a mean of 2.3%. Hoko Chinook survival rates lie between these extremes with a mean of 1.4% and a range of 0.1–3.2%. Across their entire time series, there is little evidence of a long-term trend in early marine survival and limited evidence of covariation among stocks, i.e., SOO versus QUE correlation coefficient $R$ = 0.63; SOO-HOK and QUE-HOK $R$ = 0.29. In terms of more recent performance, the survival rates of all three indicator stocks have declined considerably from the series-wide highs observed for the 1999 BY with some rebounding in the past couple of years.



Hoko Fall Fingerling
Index Of Age 2 Survival

Hoko Fall Fingerling
Age 2 Survival Rates

Queets Fall Fingerling
(Washington Coastal Wild)
Index Of Age 2 Survival
r=0.09

Queets Fall Fingerling
(Washington Coastal Wild)
Age 2 Survival Rates

*Figure 2.25 CWT survival index and survival rate for Hoko, Queets, and Sooes Fall Fingerling stocks. r: Pearson correlation coefficient between CWT and EV survival indices.*

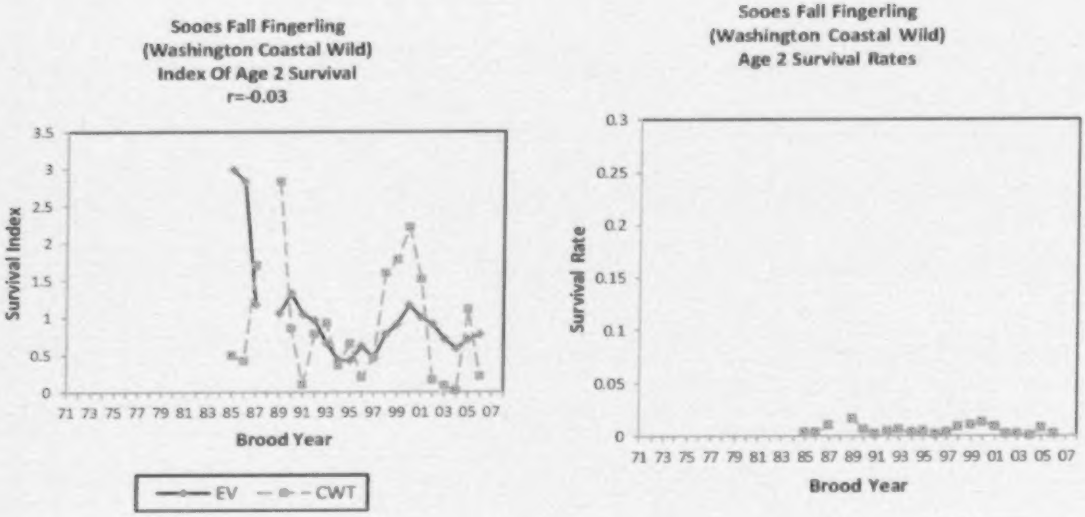


*Figure 2.25 Page 2 of 2.*

### 2.2.7.3 Mortality Distributions

Washington coastal indicator stocks exhibit a mortality distribution consistent with a far north migration pattern. On average, 86% of all fishery-related mortality, which accounts for approximately a third of total mortality, results from fisheries occurring north of the US and Canada border. The majority of these mortalities occur in the SEAK and NBC AABM troll fisheries (Figure 2.26; Appendix C28, C52, and C68). Whereas southern US fishery-related mortalities are virtually nonexistent (1–5%) for the Hoko and Sooes indicator stocks, terminal net fisheries targeting Queets River fall-run Chinook account for 17% of the annual mortality distribution, on average. Escapement recoveries for the three stocks have averaged between *ca*. 40% (Queets) and 70% (Hoko) of the total distribution in recent years (Table 2.8). Lastly, beyond reductions in mortality occurring in the WCVI troll fishery (all three stocks), modest increases occurring in Strait of Georgia sport (HOK and SOO), and a shift towards a higher escapement fraction prior to the 1999 Agreement (Appendix C), there is limited evidence of a systematic shift in mortality distributions for these stocks between the current (2009) and prior agreement period (1999; Figure 2.26).

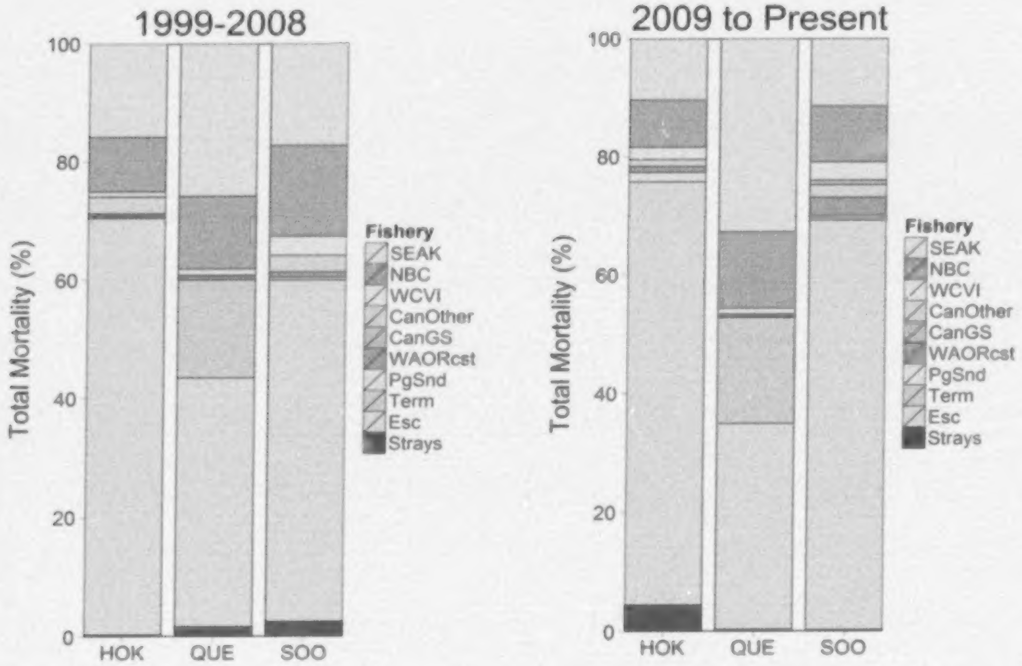


*Figure 2.26 Distribution of total mortality for Washington Coast indicator stocks for the previous (1999–2008) and current (2009–present) agreement periods.*

## 2.2.8 Washington Salish Sea Stocks

There are 14 CWT indicator stocks analyzed within the Washington Salish Sea. The analysis of two additional stocks, Squaxin Net Pens and University of Washington accelerated rearing production, was discontinued with the phase out of these production units. The indicator stocks are a mixture of traditional hatchery production for harvest purposes, and natural stock supplementation programs from brood stock collected on the spawning grounds. Except for one stock, White River Spring yearlings, these CWT indicator groups are adipose clipped (marked), and therefore available for retention mark-selective sport fisheries, which have been expanding in marine and freshwater fisheries in the Salish Sea since 2003. Current marine nontribal sport fisheries within Puget Sound are almost exclusively under mark-selective regulations. Consequently, estimates of fishing mortality from these adipose-clipped CWT recoveries will likely overestimate the fishing mortality on unmarked natural fish that must be released. Because of different terminal fishery structure for these indicator groups due to mark-selective fisheries or directed fisheries on hatchery surplus, BYERs are expressed in terms of ocean fisheries for all of these indicators. The portion of the fishery impacts in marine area mark-selective sport fisheries are included in the ocean exploitation rate estimates presented below. Salish Sea origin stocks have the highest exposure to differential harvest rates from mark-selective fisheries; consequently, the BYER estimates may be biased high with respect to the exploitation rates on natural stocks. Details on the CWT indicator stock groups and influence of mark-selective and terminal fisheries on the estimates are presented in the regional subsections below.

### 2.2.8.1 Northern Puget Sound

Indicator stocks in northern Puget Sound include Fingerling and yearling Spring tag groups from Nooksack River (NSF, NKS) and Skagit River (SKF, SKS) and Summer/Fall Fingerling groups from Samish (SAM) and Skagit (SSF) rivers. Nooksack and Skagit Spring stocks are listed in the Northern Puget Sound Natural Spring stock group in Attachments IV and V. Releases of yearling spring Chinook salmon into the Nooksack River was discontinued following the 1996 BY. The Nooksack Spring hatchery program is primarily for the purpose of natural supplementation and also supports a small tribal subsistence fishery in the river. The SAM stock indicator does not represent an associated natural stock but is important for evaluating the large hatchery production program from Samish Hatchery. The Skagit Spring program is primarily for harvest augmentation; the returning fish are subjected to a fairly intensive MSF in the area near the hatchery. The primary purpose for the Skagit summer fingerling group is fishery evaluation of the natural stock in the system. Brood stock for this program is captured on the spawning grounds. The yearling program in the Skagit River has been discontinued. The last release was the 2010 BY, released in spring of 2012.

#### *2.2.8.1.1 Brood Year Exploitation Rates*

The BYER for NSF has been on an increasing trend since the start of releases in the early 1990s, reaching 56% in 2007 (Figure 2.27). Since 1995, the ocean fishery BYERs for the other northern Puget Sound indicator stocks show no trend for SAM (range 29–48%) and SSF (range 21–41%), but during BYs 1995–2007 show a declining trend for SKS (49–18%) and SKF (42–17%; Figure 2.28; Figure 2.29). The BYER for SAM includes fishery mortalities in the Bellingham Bay terminal net fishery.

The most recent five-year average BYERs for current programs are 54% for NSF, 22% for SKF, 25% for SKS, 34% for SAM and 30% for SSF.

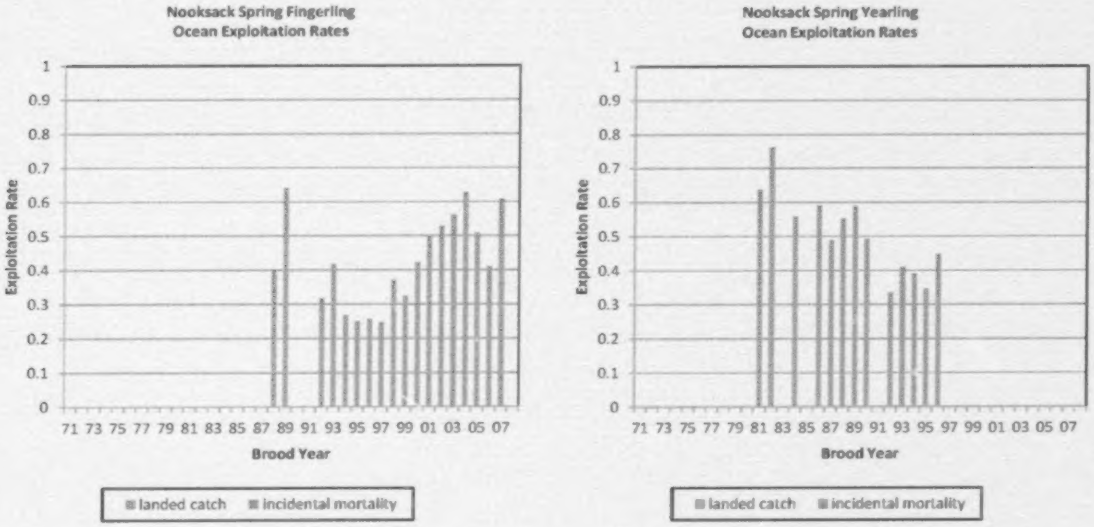


*Figure 2.27 Brood year exploitation rate in terms of landed catch and incidental mortality for Nooksack Spring Fingerling and Nooksack Spring Yearling CWT indicator stocks.*

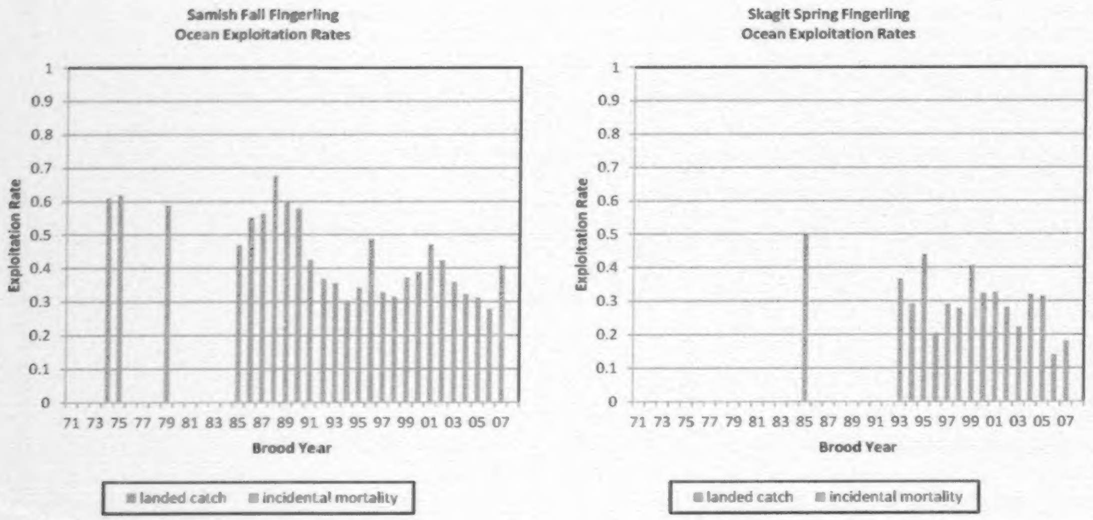


*Figure 2.28 Brood year exploitation rate in terms of landed catch and incidental mortality for Samish Fall Fingerling and Skagit Spring Fingerling CWT indicator stocks.*

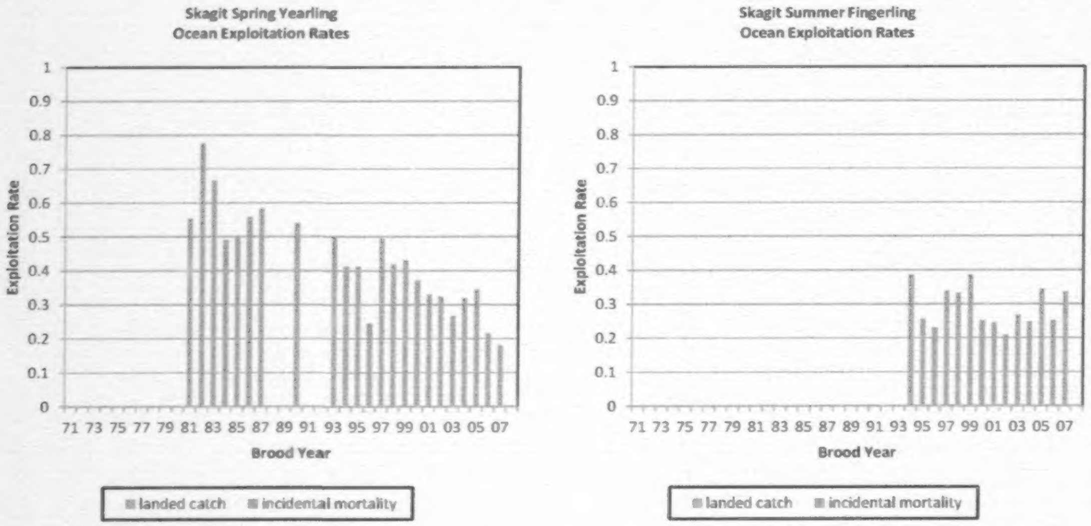


*Figure 2.29 Brood year exploitation rate in terms of landed catch and incidental mortality for Skagit Spring Yearling and Skagit Summer Fingerling CWT indicator stocks.*

### *2.2.8.1.2 Survival Rates*

Since the mid-1990s, survival rates from release to age 2 (fingerlings) or age 3 (yearlings) for northern Puget Sound indictor stocks have no obvious trends (Figures 2.30–2.35). More recently, survival rates have been in the range of 1–5%. The survival index and the EV were moderately correlated for SAM (r = 0.63) and poorly correlated for NSF (r = 0.23) and NKS (r = 0.08).

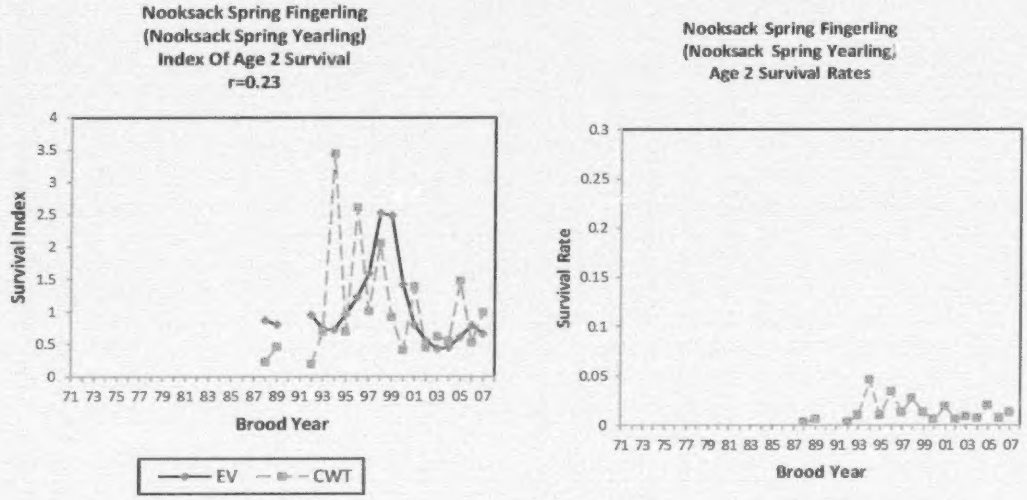


*Figure 2.30 CWT survival and EV indices and survival rate for Nooksack Spring Fingerling stock. r: Pearson correlation coefficient between CWT and EV survival indices.*

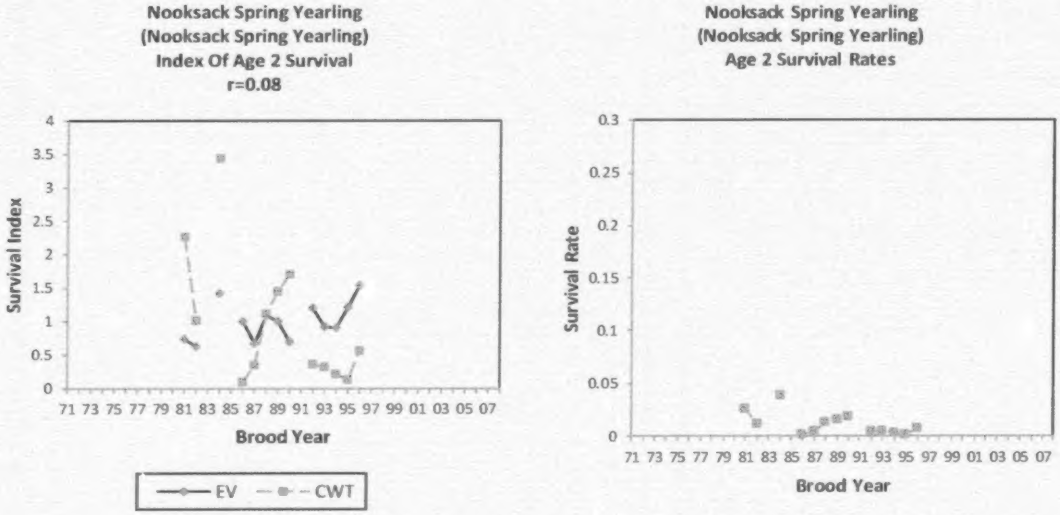


*Figure 2.31 CWT survival and EV indices and survival rate for Nooksack Spring Yearling stock. r: Pearson correlation coefficient between CWT and EV survival indices.*

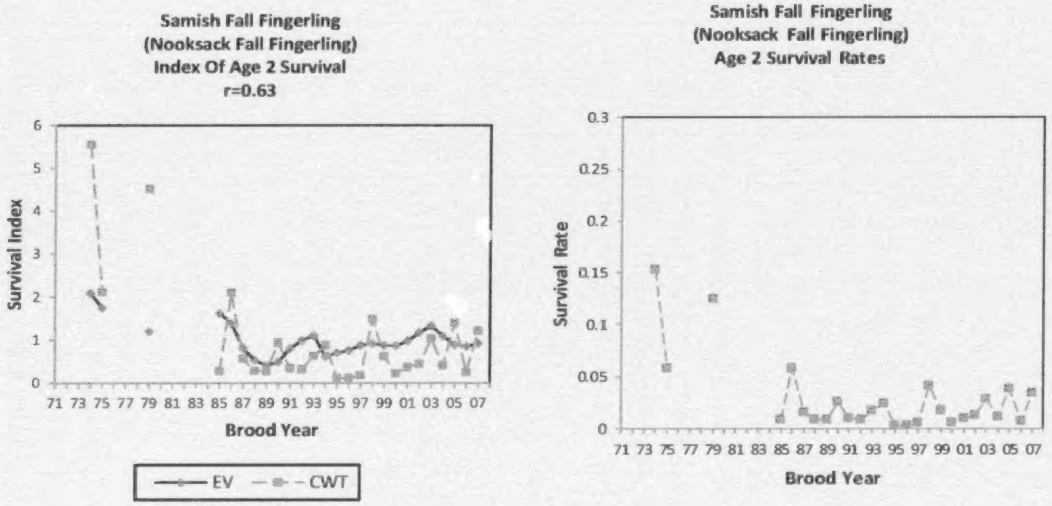


*Figure 2.32 CWT survival and EV indices and survival rate for Samish Fall Fingerling stock. r: Pearson correlation coefficient between CWT and EV survival indices.*

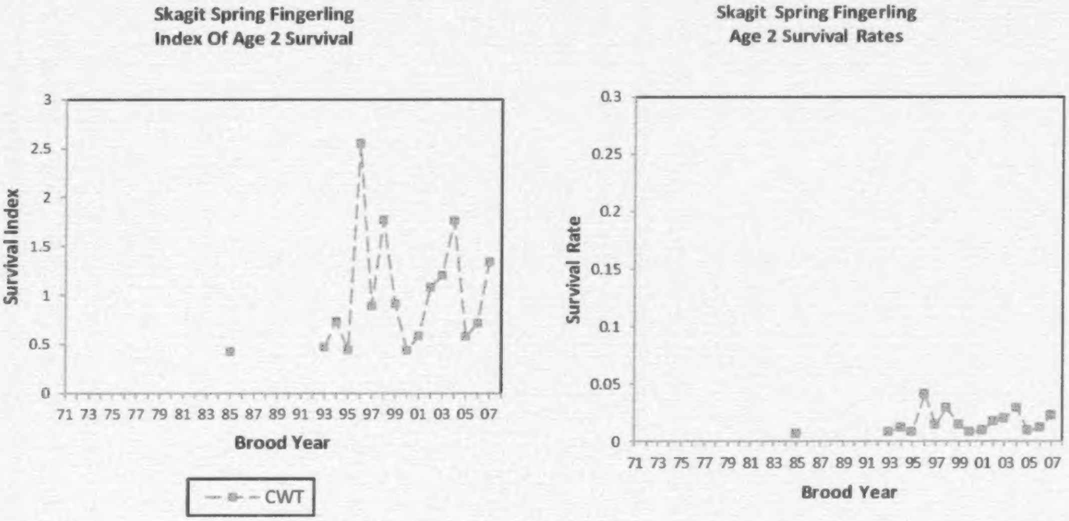


*Figure 2.33 CWT survival index and survival rate for Skagit Spring Fingerling stock.*

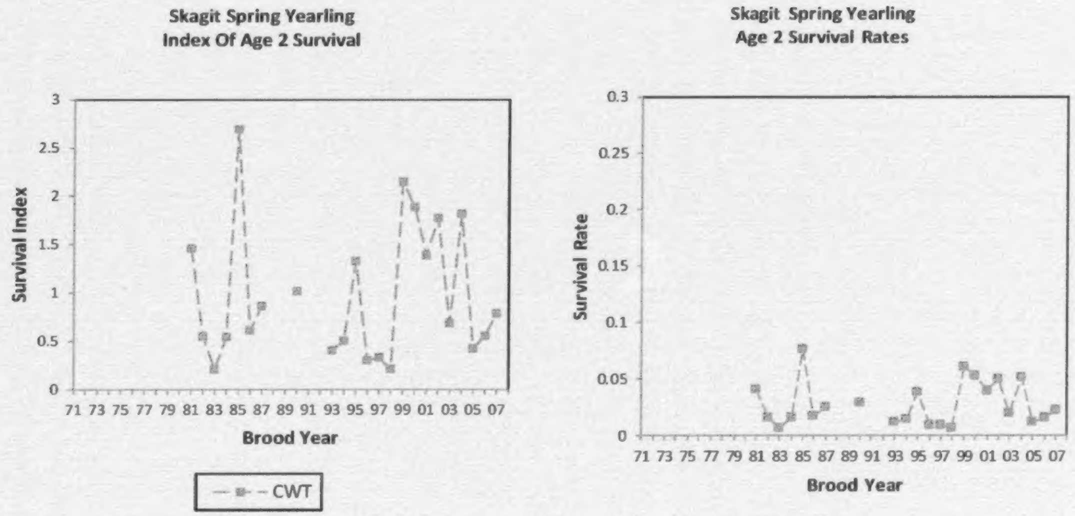


*Figure 2.34 CWT survival index and survival rate for Skagit Spring Yearling stock.*

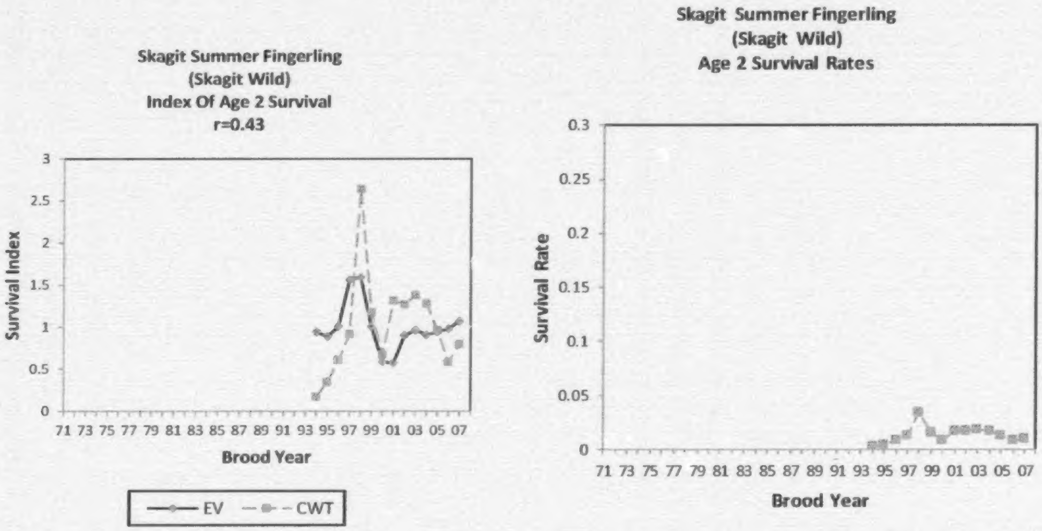


*Figure 2.35 CWT survival and EV indices and survival rate for Skagit Summer Fingerling stock. r: Pearson correlation coefficient between CWT and EV survival indices.*

### *2.2.8.1.3 Mortality Distributions*

As a percentage of total AEQ mortality for the North Puget Sound stocks during 1999–present, fishery related mortality averaged 46% for NKS (Appendix C46; one year only, 1999), 49% for NSF (Appendix C48), 75% for SAM (Appendix C58), 42% for SKF (Appendix C62), 52% for SKS (Appendix C64) and 41% for SSF (Appendix C80; Figure 2.36).

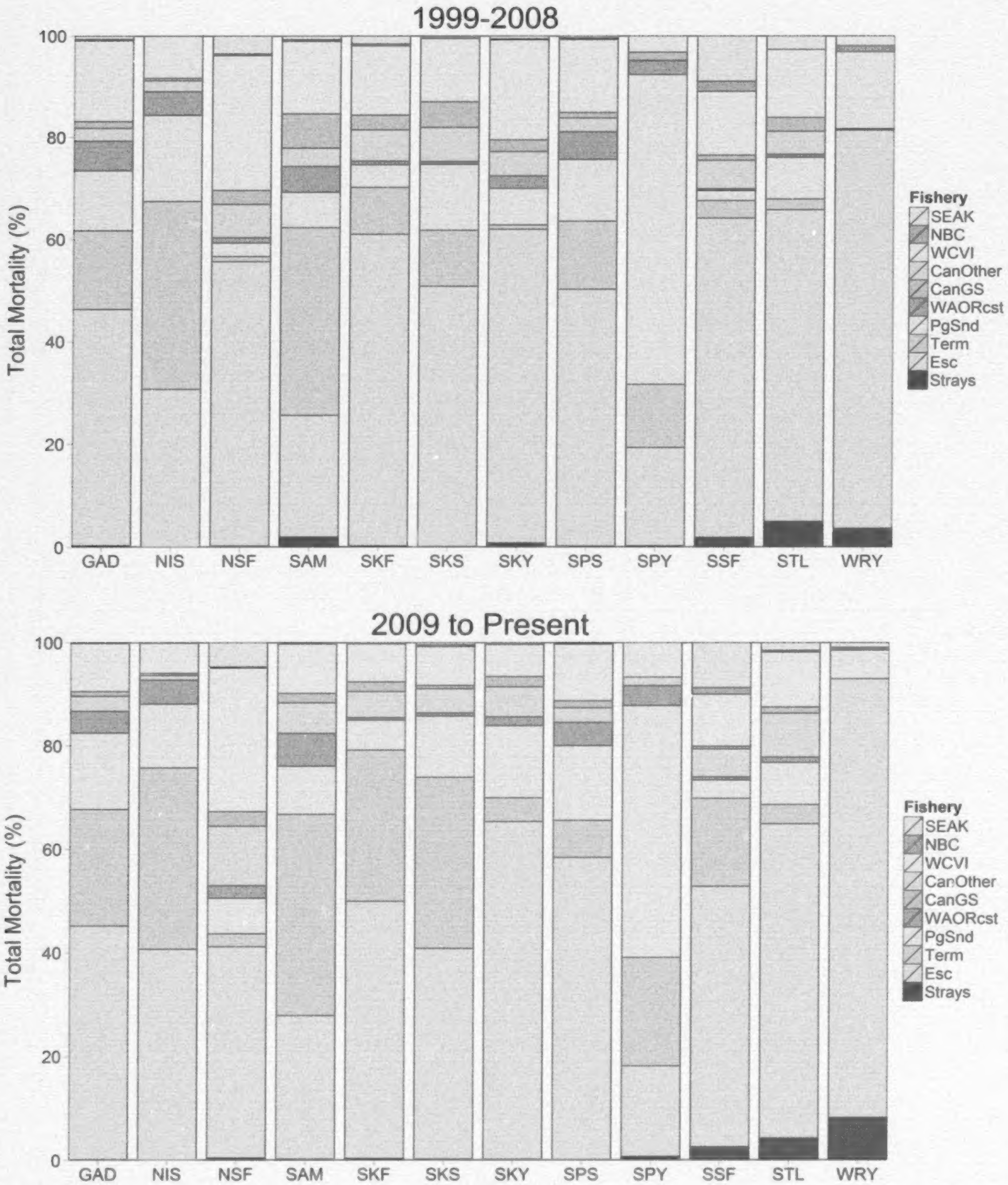


*Figure 2.36 Distribution of total mortality for Washington Salish Sea indicator stocks for the previous (1999–2008) and current (2009–present) agreement periods.*

Because of their location and northerly ocean migration, the majority of fishing mortality on North Puget Sound stocks is in Canadian and northern Puget Sound fisheries. Mortality in Canadian fisheries occurs primarily in WCVI, averaging 26% during catch years 1999–present, while northern Puget Sound fisheries account for 19%, on average, in the same period. Although SSF experienced the highest fishery mortality in SEAK among all Salish Sea stocks (9%) during 1999–present; for the combined North Puget Sound stock group, the percent mortality in fisheries in SEAK and along the Washington and Oregon coast is low, averaging approximately 2% for these years in each area. Within Puget Sound, the primary fishery intercepting these stocks is the marine sport fisheries, which are now almost exclusively under mark-selective regulations. A significant state and tribal net fishery within Bellingham Bay targets SAM, contributing the majority of the percentage of the value shown under *Puget Sound Net* in Appendix C58. The remaining portion of mortality associated with Puget Sound Net for SAM results from the San Juan Islands net fishery, which is under Fraser Panel control in the late summer and fall. Percentage of fishing mortality in Puget Sound marine and freshwater net fisheries is low, with the exception of SAM and the Skagit River during 2009–present, when abundance of Skagit Summer/Fall Chinook was high and there was a corresponding directed river net fishery.

For the aggregate group, the distribution of fishing mortality between fisheries north or south of the US and Canada border has shifted slightly during 1999–present, with a greater proportion of the impacts occurring in U.S waters. The increase in recent years for southern US fisheries is primarily due to the implementation of MSFs beginning 2003 and the net fishery in the Skagit River.

### 2.2.8.2 Central Puget Sound

Indicator stocks in Central Puget Sound, from north to south, include fingerling tag groups from the Stillaguamish River (STL) and Skykomish River (SKY), a tributary in the Snohomish Basin. The Stillaguamish and Snohomish stocks are listed as part of the Puget Sound Natural Summer/Fall stock group in Attachment IV and V. The Stillaguamish Fall CWT program is primarily for the purpose of fishery evaluation, and some natural supplementation. Brood stock for this program is captured on the spawning grounds. The Skykomish program, which uses returns of summer run fish to the Wallace Salmon Hatchery for brood stock, is primarily for fishery evaluation, providing some limited harvest in the inriver mark-selective sport fishery when abundance is favorable.

#### *2.2.8.2.1 Brood Year Exploitation Rates*

The ocean fishery BYERs have declined dramatically for STL—from 90% for 1980 BY to 37% in 2007 (Figure 2.37). The rates for SKY have only been available starting with the 2000 BY, where BYERs have declined from 42% to 30% (Figure 2.37).

#### *2.2.8.2.2 Survival Rates*

Survival rates to age 2 for STL ranged from a low of 0.3% for the 1980 BY to a high of 6.4% in 1990 (Figure 2.38). Cohort survival to age 2 for SKY ranged from 0.4% in 2005 to 1.9% 2004, (Figure 2.39). The survival index and the EV was moderately correlated for STL with Pearson correlation coefficient of 0.43. The small number of years available for SKY prohibit comparisons between the survival index and the EV.

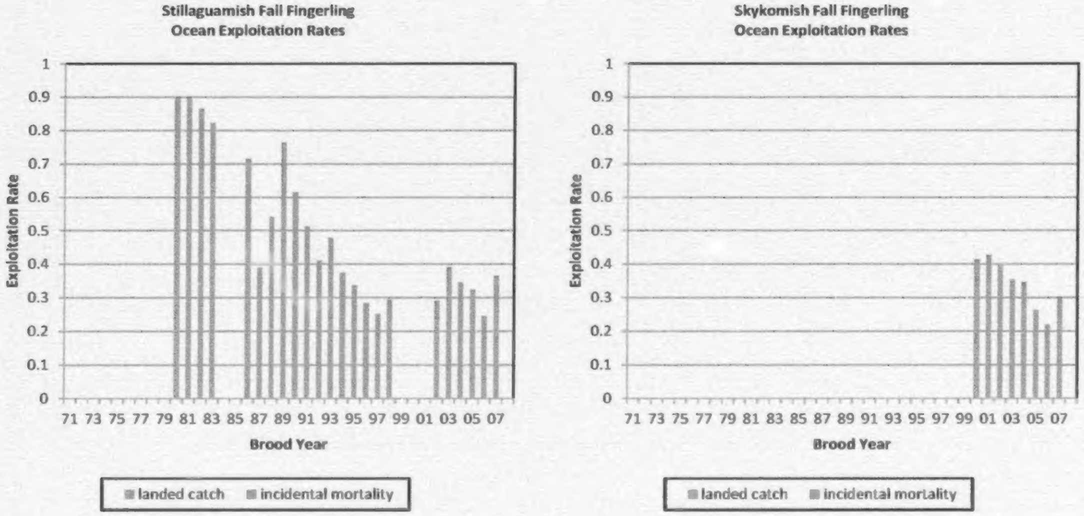


*Figure 2.37 Brood year exploitation rate in terms of landed catch and incidental mortality for Stillaguamish Fall and Skykomish Summer Fingeriing CWT indicator stocks.*

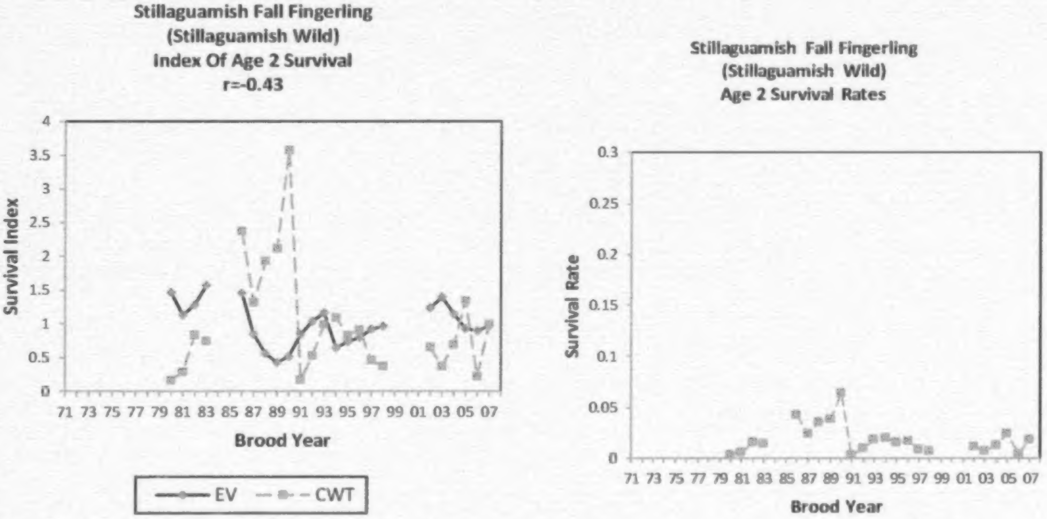


*Figure 2.38 CWT survival and EV indices, and survival rates for Stillaguamish Fall Fingerling stock. r: Pearson correlation coefficient between CWT and EV survival indices.*

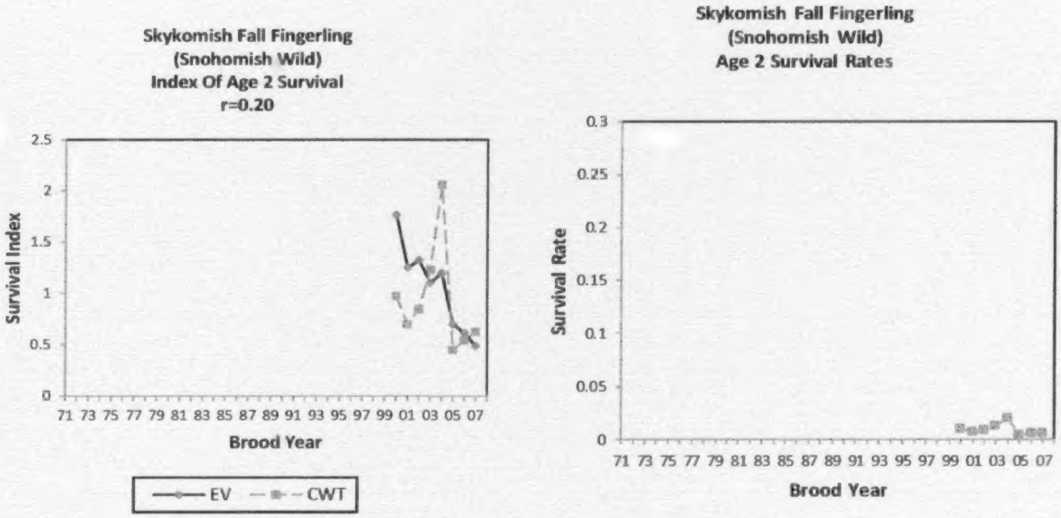


*Figure 2.39 CWT survival and EV indices and survival rate for Skykomish Fall Fingerling stock. r: Pearson correlation coefficient between CWT and EV survival indices.*

*2.2.8.2.3 Mortality Distributions*

Fishery mortality, as a percentage of total AEQ mortality, for the Central Puget Sound stocks during 1999–present averaged 37% for SKY (Figure 2.36; Appendix C66), and 39% for STL (Figure 2.36; Appendix C82). Similar to North Puget Sound stocks, the percentage of fishing mortality is very low in SEAK (<3% each) and highest in Canadian fisheries, averaging 21% during 2004–2011 for SKY and 20% for STL during the years with data (1999–2001 and 2006–2011). The average percent mortality in Puget Sound fisheries during 1999–present of 12% for SKY and 15% for STL is lower than that for the North Puget Sound group because of the lack of terminal fisheries for these stocks. In recent years, the bulk of the fishery mortalities in Puget Sound have occurred in marine area mark-selective sport fisheries.

Since 1999, the two combined stocks experienced an increase in the percentage of mortality in fisheries both north and south of the US and Canada border. The increase in the southern US fisheries to since 2007 is primarily due to mark-selective sport fisheries and would not correctly represent impacts on natural stocks.

### 2.2.8.3 South Puget Sound

Indicator stocks in South Puget Sound include South Puget Sound Fall Fingerling (SPS), South Puget Sound Fall Yearling (SPY), Nisqually Fall Fingerling (NIS), and White River Spring Yearling (WRY). The SPS indicator group is an aggregate of several CWT indicator programs, which is now composed of tag releases from Soos Creek Hatchery in the Green River Basin and Grovers Creek Hatchery on the western shore of Puget Sound across from Seattle. The SPS indicator is the best representative of mixed stock fishery mortalities in Green River and Lake Washington of those listed as part of the Puget Sound Natural Summer/Falls stock group in Attachment IV and V. However, because of directed terminal fisheries on the two components of SPS indicator, the SPS stock is not suitable for assessing these fishery types. In addition, because stocks originating in South Puget Sound are exposed to a higher level of mark-selective fishing, exploitation rates measured from marked tag recoveries will likely overestimate the impacts on unmarked natural stocks. The NIS and SPY stocks are the southernmost indicator tag groups in Puget Sound. The SPY indicator represents hatchery production where the intent of the program is to release yearling Chinook salmon that have a higher tendency to remain within Puget Sound and benefit the Puget Sound sport fishery. This hatchery program has been reduced substantially since Chinook salmon were listed in 1999 as threatened status under the US Endangered Species Act. The WRY indicator has not been adipose-clipped since the 2002 BY and all tag recoveries result from electronic tag detection sampling. The migration range of WRY is almost exclusively within the Salish Sea where all fisheries are sampled with electronic tag detectors.

#### *2.2.8.3.1 Brood Year Exploitation Rates*

The ocean fishery BYER for SPS has ranged between a high of 73% for the 1975 BY to a low of 23% for the 1996 BY (Figure 2.40). The relatively high BYER for SPY reflects the intent of full harvest on this hatchery stock with achievement of egg-take goals as the only escapement objective. The 1980 BYER for NIS and WRY were in the vicinity of 50–70%. Since 2000, ocean BYERs averaged 27% for NIS and 13% for WRY (Figure 2.41). A total fishery BYER for SPS and NIS would include additional mortalities from inriver fisheries, which can be significant for these indicators.

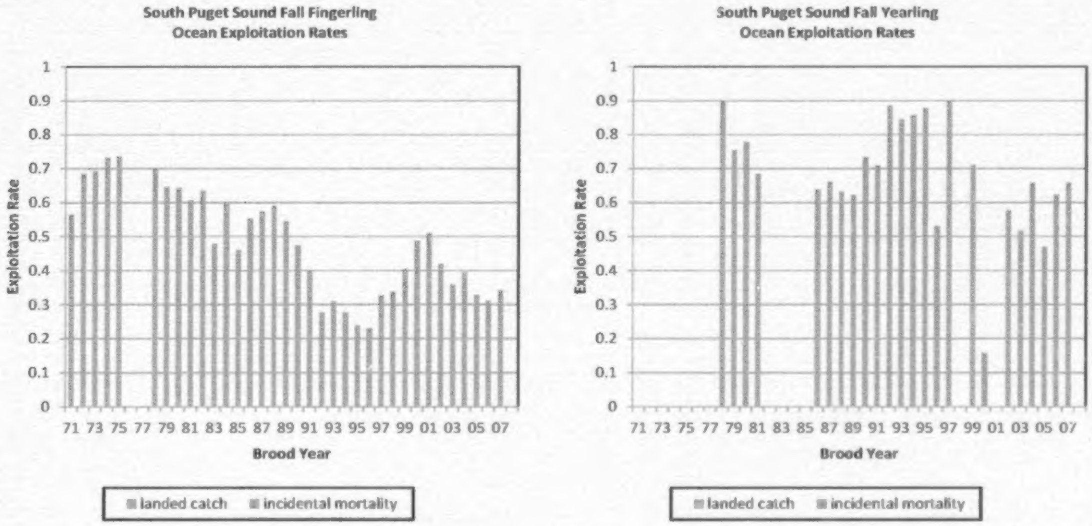


*Figure 2.40 Brood year exploitation rate in terms of landed catch and incidental mortality for South Puget Sound Fall Fingerling and Yearling indicator stocks.*

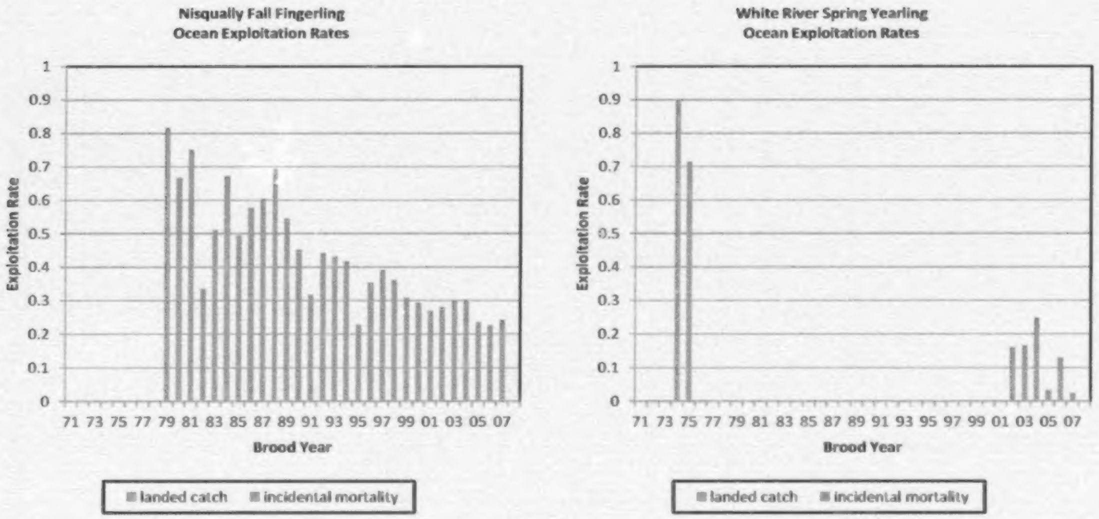


*Figure 2.41 Brood year exploitation rate in terms of landed catch and incidental mortality for Nisqually Fall Fingerling and White River Spring Yearling CWT indicator stocks.*

### *2.2.8.3.2 Survival Rates*

Survival rates from release to age 2 for SPS ranged from a low of 0.2% for 2001 BY to a high of 9.5% for 1975 BY (Figure 2.42). With the exception of the 1985 BY where the survival rate was 15%, the rates for SPY have been low and often less than 1% (Figure 2.43). Survival for NIS ranged from a low of 0.1% for 1987 BY to a high of 4.5 % for 2004 BY (Figure 2.44). Survival for WRY ranged from a low of 0.13% for 1975 BY to a high of 5.7% for the 2002 BY (Figure 2.45). The survival index and the EV was poorly correlated for SPS with Pearson correlation coefficient of 0.32 and not correlated for SPY (r = 0.01).

### *2.2.8.3.3 Mortality Distributions*

Fishery mortality as a percentage of total AEQ mortality for the South Puget Sound stocks during 1999–present averaged 48% for SPS (Figure 2.36; Appendix C72), 81% for SPY (Figure 2.36; Appendix C74), 66% for NIS (Figure 2.36; Appendix C44) and 18% for WRY (Figure 2.36; Appendix C94). The fishery mortality distribution for SPS and NIS north of the US and Canada border is similar to the other Puget Sound Fall Fingerling stocks, with a very low percentage (<0.5%) in SEAK and much higher rates (approximately 14%), in Canadian fisheries (primarily WCVI). The fall fingerling stocks (SPS and NIS) have a higher mortality in Puget Sound fisheries than the North and Central Puget Sound indicators. The higher rates are the result of exposure to mark-selective sport fisheries throughout Puget Sound and to significant terminal net fisheries in most years that can target large-scale hatchery production. Fishing mortality for WRY is predominantly within Puget Sound.

Since 1999, the distribution of fishing mortality for SPS and NIS has remained stable.

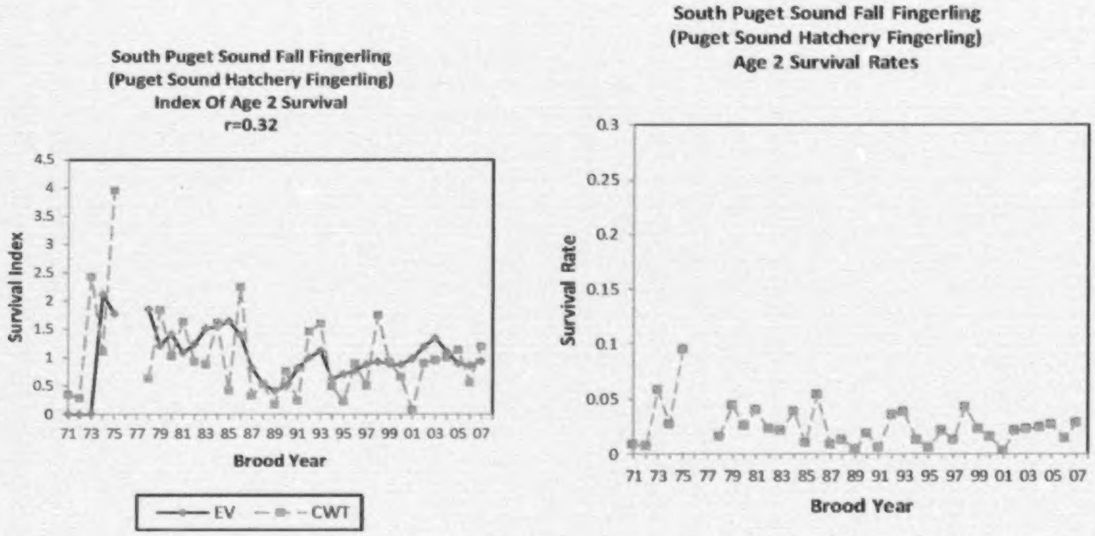


*Figure 2.42 CWT survival and EV indices and survival rate for South Puget Sound Fall Fingerling stock. r: Pearson correlation coefficient between CWT and EV survival indices.*

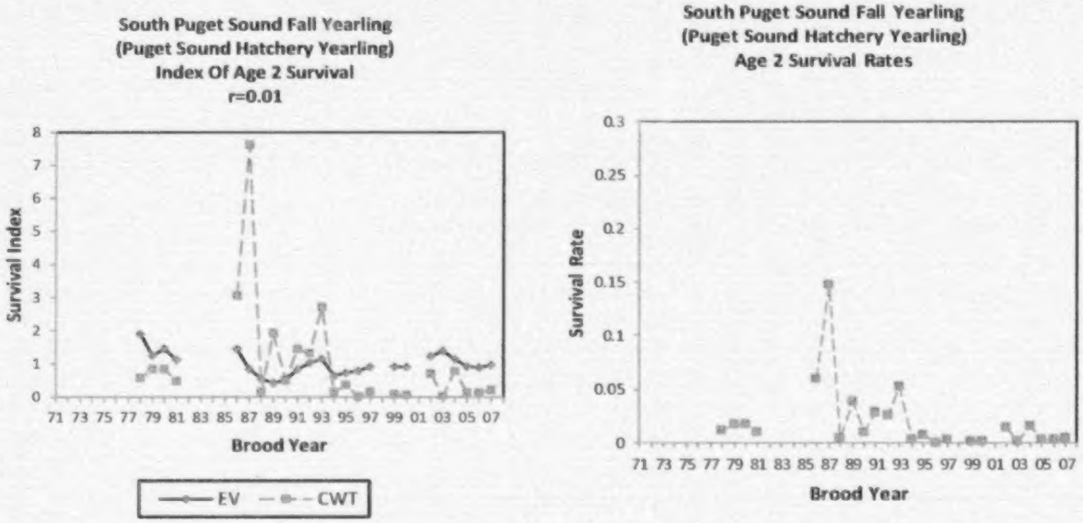


*Figure 2.43 CWT survival and EV indices and survival rate for South Puget Sound Fall Yearling stock. r: Pearson correlation coefficient between CWT and EV survival indices.*

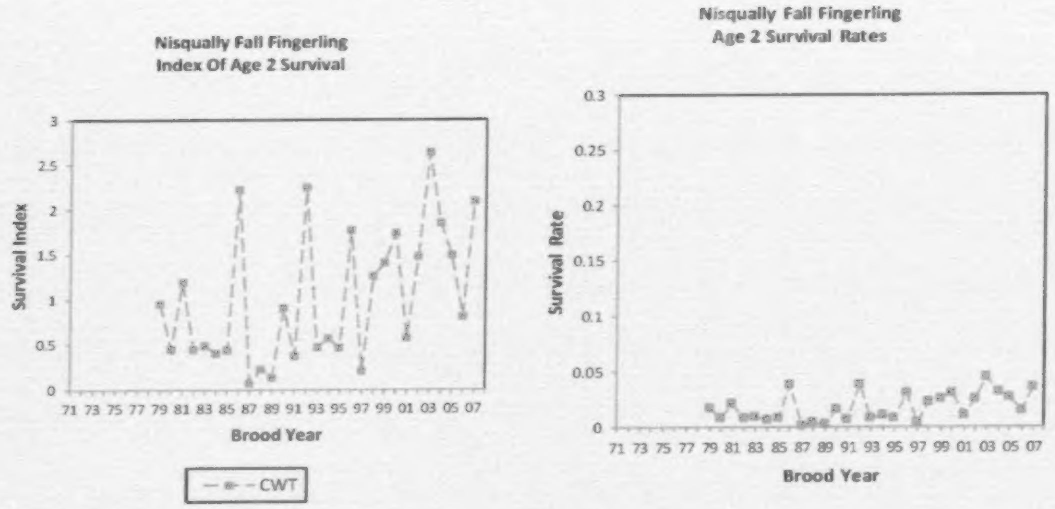


*Figure 2.44   CWT survival index and survival rate for Nisqually Fall Fingerling stock.*

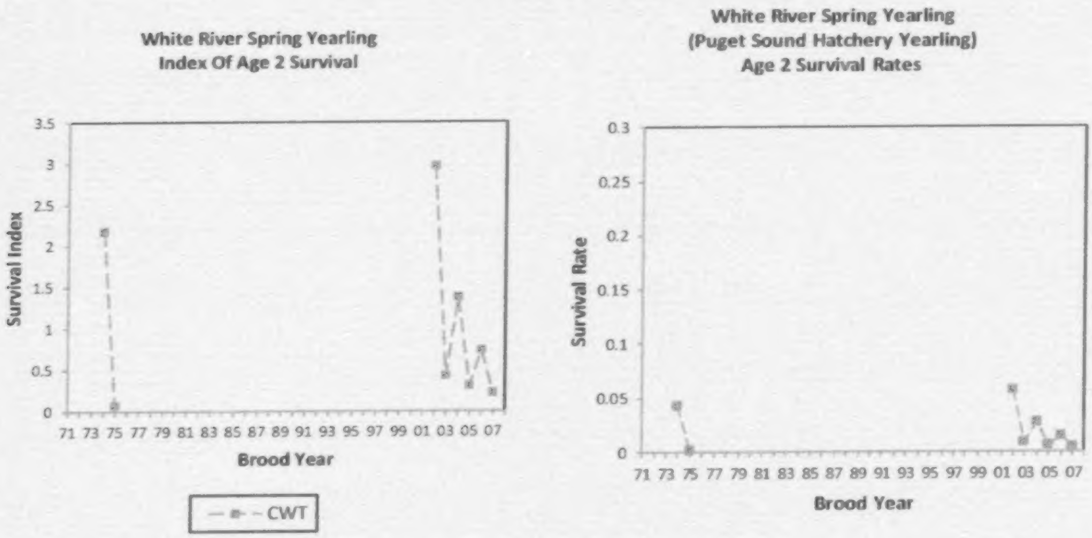


*Figure 2.45   CWT survival index and survival rate for White River Spring Yearling stock.*

### 2.2.8.4 Juan De Fuca and Hood Canal

Tagging of Elwha River (ELW) Fall Fingerling stock in Juan de Fuca was discontinued with the 1994 BY. A hatchery program continues using brood stock collected from the spawning grounds and to the hatchery rack. The Elwha Hatchery program has now shifted to a stock restoration and recovery program with the removal of the Elwha River dams that began in September 2011. Marking and tagging of this stock resumed with the 2012 BY as part of monitoring and evaluation of the restoration project. The George Adams (GAD) stock indicator is used to represent fishery and escapement distribution of natural fall fingerlings in Hood Canal tributaries, primarily the Skokomish River at southern end of Hood Canal.

#### *2.2.8.4.1 Brood Year Exploitation Rates*

For the BYs available for ELW, the ocean fishery BYER ranged from a high of 78% for BY 1982 to a low of 38% for the 1992 and 1993 BYs (Figure 2.46). The BYER for GAD ranged from a high of 80% in 1989 to a low of 23% in 1994 (Figure 2.46). A total fishery BYER for GAD would include additional mortality associated with the significant river fisheries that occur in most years.

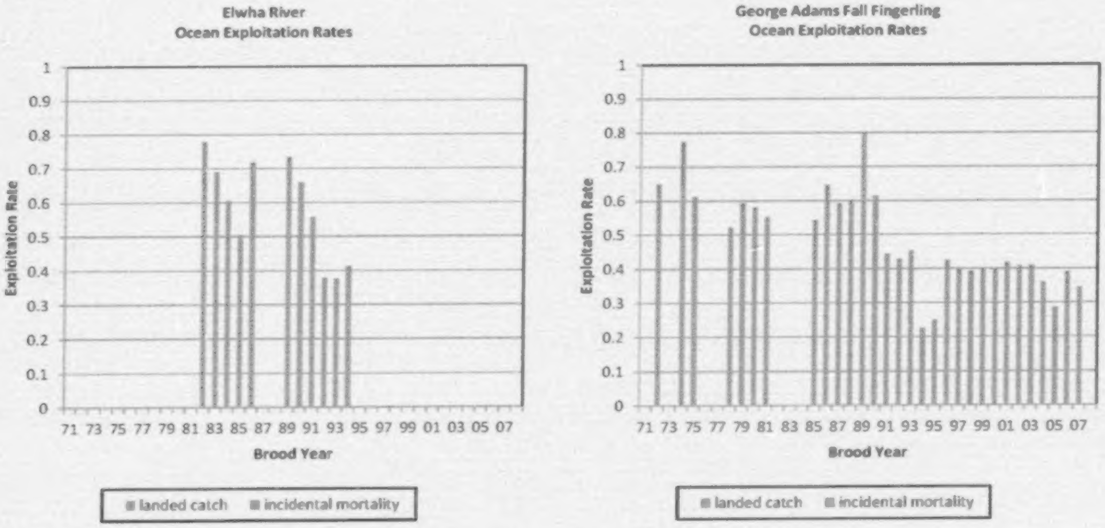


*Figure 2.46 Brood year exploitation rate in terms of landed catch and incidental mortality for Elwha and George Adams (Skokomish River) Fall Fingerling CWT indicator stocks.*

### *2.2.8.4.2 Survival Rates*

Survival rates of ELW were initially approximately 2% in the first three years of tagging (1982–1984), plummeted in 1985 to less than 1%, and remained there until the program was discontinued (Figure 2.47). Survival rates for GAD averaged 1.2% during 1985–2006, and ranged from a low of 0.04% for BY 1990 to a high of 6.3% for BY 1978 (Figure 2.48).

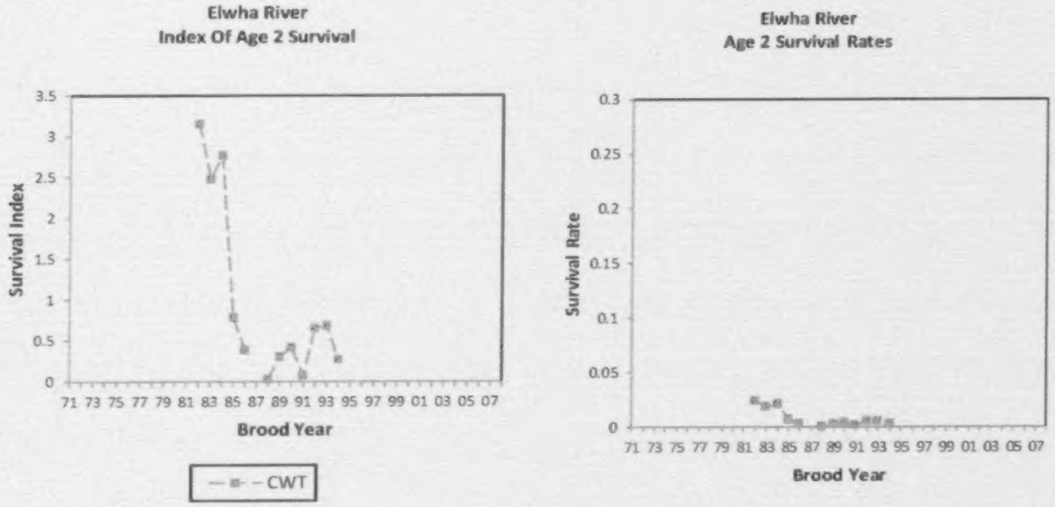


*Figure 2.47 CWT survival index and survival rate for Elwha River stock.*

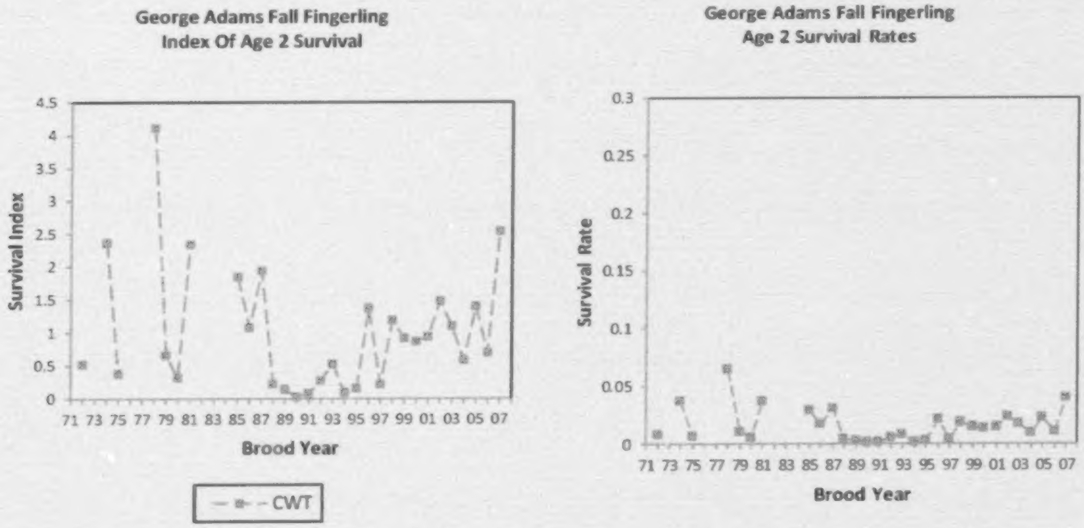


*Figure 2.48 CWT survival index and survival rate for George Adams (Skokomish River) Fall Fingerling stock.*

#### *2.2.8.4.3 Mortality Distributions*

The last year of data for measuring percent distribution in total AEQ fishery mortality for ELW is 1997 (Figure 2.36; Appendix C20). During 1986–1997, fisheries in Alaska made up 8% of the mortality, Canada 33%, Washington and Oregon coast 3%, and Puget Sound 24% (primarily in the Juan De Fuca sport fishery). Escapement of ELW averaged 32% during this period. For GAD during 1999–present, fisheries in Alaska made up 1% of the fishery and escapement distribution, Canada 18%, Washington and Oregon coast 5% and Puget Sound 30% (Figure 2.36; Appendix C22). Escapement of GAD during 1999–present averaged 46%.

Distribution of fishing mortality for GAD during 1999–present between Alaska, Canada and the southern US was shifted slightly south by a reduction in impacts in fisheries north of the US and Canada border, but proportion of escapement of GAD has remained relatively unchanged.

### 2.2.8.5 Regional Summary for Washington Salish Sea Stocks

For Washington Salish Sea stocks, BYER is measured in terms of ocean mortality only because terminal fisheries may not properly reflect the impacts on the natural stock represented by the CWT indicator. Some terminal fisheries are designed as hatchery fish target zones which would exceed the impacts on any natural stocks in the basin. Additionally, some river sport fisheries are now managed under mark-selective regulations that likely overestimate impacts on natural stocks. The ocean fishery BYERs contain estimates of exploitation in the Puget Sound marine area mark-selective sport fisheries which have grown significantly since 2003. Consequently, these BYERs for Puget Sound stocks, especially those from central and southern Puget Sound, will tend to overestimate the exploitation relative to that of the natural stocks they are intended to represent. Therefore, because of the exclusion of terminal fisheries and the inclusion of Puget Sound marine area MSFs, the ocean fishery BYERs for Washington Salish Sea stocks will not reflect total fishery impacts on natural stocks.

The BYERs for Washington Salish Sea Stocks averaged 44% (per stock average range of 29–58%) for the fall fingerling stocks (SAM, SSF, STL, SKY, SPS, NIS, ELW, and GAD) and 40% (range 30–51%) for the spring fingerling and yearling stocks (NSF, NKS, SKF, SKS, and WRY; Table 2.9). Comparing the mean BYER to the rate in the last complete BY, the BYER was higher in the last complete BY for only one of the fall fingerling stocks (SSF) and one of the spring stocks (NSF).

Survival rates to age 2 for Washington Salish Sea Stocks were typically 1–3% for most indicators and similar to the rates commonly observed for fall-run fingerling type stocks (Table 2.9). Survival rates to age 3 for spring-run yearling stocks were 1.1–2.85%, and were at the lower end of rates usually observed for yearling type releases that should accrue some survival benefit from an extra year of rearing in the hatchery. The trend in survival rates for those stocks with a long continuous time series of analysis (e.g., SAM, SPS, GAD) shows the lowest survival rates occurring for the late 1980s to early 1990s broods, with somewhat improved survivals beginning in the early 2000s.

Calendar year escapement for fall fingerling stocks varies between the stocks with significant terminal fisheries that have 2009–present average escapements of 28–58% (SAM, SPS, NIS, and GAD) and stocks that do not have significant terminal fisheries where escapement is 61–65% (SSF, STL, and SKY; Table 2.9). The mean escapement for spring stocks has ranged from 41% for NSF and SKS to 75% for WRY.

*Table 2.9* *Summary of statistics generated by the 2011 CWT cohort analysis for Washington Salish Sea indicator stocks by region. Statistics include total ocean fishery mortality (adult equivalent catch plus incidental mortality) brood year exploitation rate (BYER), cohort survival rate to age 2, and calendar year (CY) percent distribution in the escapement.*

| | | | **BYER (total mortality)** | | **Survival rate** | | **CY % Escapement[1]** | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **1999–2008** | **2009–present** | |
| **Subregion** | **Stock Abbrev** | **Indicator Stock Name** | **Mean (range)** | **Last complete BY** | **Mean (range)** | **Last complete BY** | **Mean (range)** | **Mean (range)** | **Last CY (if ≠ current)** |
| North Puget Sound | NSF | Nooksack Spring Fingerling[2] | 43% (25–64%) | 61% (2007) | 1.35% (0.25–4.49%) | 1.29% (2007) | 55% (38–82%) | 41% (21–55%) | 21% (2012) |
| | NKS | Nooksack Spring Year[2] | 51% (34–76%) | 45% (1996) | 1.09% (0.1–3.74%) | 0.61% (1996) | ND[3] | ND | ND |
| | SAM | Samish Fall Fingerling[2] | 44% (28–68%) | 41% (2007) | 2.81% (0.32–15.25%) | 3.33% (2007) | 24% (13–31%) | 28% (18–36%) | 18% (2012) |
| | SKF | Skagit Spring Fingerling[2] | 30% (14–50%) | 18% (2007) | 1.59% (0.68–4.09%) | 2.15% (2007) | 61% (41–78%) | 50% (44–55%) | 46% (2012) |
| | SKS | Skagit Spring Yearling[2] | 43% (18–78%) | 18% (2007) | 2.75% (0.58–7.58%) | 2.2% (2007) | 51% (31–68%) | 41% (39–45%) | 40% (2012) |
| | SSF | Skagit Summer Fingerling[2] | 29% (21–39%) | 34% (2007) | 1.3% (0.22–3.41%) | 1.02% (2007) | 62% (53–76%) | 50% (32–71%) | 71% (2012) |
| Central Puget Sound | STL | Stillaguamish Fall Fingerling[2] | 50% (25–90%) | 36% (2007) | 1.79% (0.3–6.41%) | 1.78% (2007) | 61% (40–80%) | 61% (53–69%) | 69% (2012) |
| | SKY | Skykomish Fall Fingerling[2] | 34% (22–43%) | 30% (2007) | 0.89% (0.43–1.97%) | 0.6% (2007) | 61% (56–72%) | 65% (55–76%) | 59% (2012) |
| South Puget Sound | SPS | South Puget Sound Fall Fingerling[2] | 48% (23–74%) | 34% (2007) | 2.45% (0.19–9.48%) | 2.87% (2007) | 50% (32–70%) | 58% (49–68%) | 57% (2012) |
| | SPY | South Puget Sound Fall Yearling[2] | 70% (47–90%) | 66% (2007) | 1.96% (0.03–14.78%) | 0.41% (2007) | 19% (2–46%) | 18% (1–49%) | 4% (2012) |
| | NIS | Nisqually Fall Fingerling[2] | 43% (23–82%) | 24% (2007) | 1.73% (0.12–4.51%) | 3.58% (2007) | 31% (11–56%) | 41% (35–49%) | 42% (2012) |
| | WRY | White Spring Yearling[2] | 34% (3–90%) | 13% (2006) | 1.98% (0.13–5.7%) | 0.42% (2007) | 78% (73–85%) | 85% (74–94%) | 74% (2012) |
| Juan de Fuca/Hood Canal | ELW | Elwha[2] | 58% (38–78%) | 41% (1994) | 0.74% (0.02–2.32%) | 0.2% (1994) | ND | ND | ND |
| | GAD | George Adams Fall Fingerling[2] | 48% (22–80%) | 35% (2007) | 1.57% (0.04–6.37%) | 3.93% (2007) | 46% (37–64%) | 45% (38–53%) | 38% (2012) |

[1] % Escapement is not a measure of performance for the escapement indicator stock(s) associated with a given CWT indicator stock. See CTC (2013) for these details.

[2] BYER is ocean exploitation rate only.

[3] No data available.

## 2.2.9 Columbia River Stocks

The Columbia River stocks are split into those from the Lower Columbia, the Upper Columbia, the Snake River tributary, and the Willamette River tributary. There are four fall Chinook salmon CWT indicator stocks for the Lower Columbia River: Columbia Lower River Hatchery Tule (LRH, released recently from Big Creek/Bonneville Hatchery), Cowlitz Hatchery Tule (CWF), Spring Creek Hatchery Tule (SPR), and Lewis River wild bright (LRW). There are two fall and one summer Chinook CWT indicator stocks for the Upper Columbia River: Columbia Upriver Bright fall Chinook (URB, from Priest Rapids Hatchery), Hanford Wild Bright fall Chinook (HAN, from Hanford Reach), and Columbia Summers (SUM, from Wells Hatchery, includes fingerlings and some yearling releases). There is one fall Chinook CWT indicator stock for the Snake River tributary, Lyons Ferry Hatchery Bright. These enter the ocean as a combination of fingerlings and yearlings; the fingerlings (LYF) are employed in this analysis. A single spring Chinook indicator stock originates in the Willamette River tributary (WSH). Juveniles are released primarily as yearlings by the Oregon Department of Fish and Wildlife from several Willamette basin hatcheries. Despite differences in outmigration age, age 2 is the youngest age recovered for all the Columbia River stocks. The CWT time series begins with the following BYs: 1975 for SUM, URB and WSH; 1976 for LRH; 1977 for CWF, LRW, and SPR; 1984 for LYF; and 1986 for HAN. The time series for LRW and LYF were interrupted by missing BYs (either no adipose fin clipped releases or no subyearling releases).

### 2.2.9.1 Brood Year Exploitation Rates

There were several general patterns in the BYER computed for Columbia River stocks (Figure 2.49; Table 2.10). For all except CWF and WSH, BYERs include recoveries from both ocean and terminal fisheries; CWF and WSH Chinook experience different terminal harvest impacts than their wild counterparts.

The three hatchery stocks in the lower Columbia River (CWF, LRH, and SPR) showed decline in BYER from highs during the late 1970s (CWF: 65% for 1977; LRH: 83% for 1976; SPR: 93% for 1973) to lows during the early to mid–1990s (CWF: 11% for 1991; LRH: 24% for 1993; SPR: 48% for 1995) with recent BYERs in between the two extremes. Average BYERs were 39% for CWF, 61% for LRH, and 73% for SPR. Incidental mortality rates averaged 7% (CWF), 10% (LRH), and 12% (SPR) of the total BY return, with ranges 3–11% (CWF), 3–23% (LRH), and 6–17% (SPR). The percentage of the BYER (landed catch + IM) that was estimated as IM averaged 19% (CWF: range 8–51%), 18% (LRH: range 9–32%), and 17% (SPR: range 12–22%) of total fishing mortality. For LRH, but not the two other stocks, IM appears to have declined substantially in recent years (average of 19% of BYER through 1998 versus 12% since 1999).

The LRW bright stock in the lower Columbia River and SUM stock in the upper Columbia River also experienced decline to particularly low BYERs in the 1990s (lowest were 23% for LRW in 1996, and 19% for SUM in 1992 and 1993), followed by increase to rates similar to those before the 1990s. For LRW the highest BYER was observed in 1983 (71%), and for SUM the highest BYER was observed in 1998 (74%). Average BYERs were 45% for LRW and 53% for SUM. Incidental mortality averaged 6% (range 2–10%) for LRW and 7% (range 3–14%) for SUM, as a percentage of the total BY return. As a part of BYER, IM averaged 15% for LRW (range 8–30%) and 15% for SUM (range 7–36%). Incidental mortality did not appear to show a trend over time for LRW, but for SUM it appeared to be somewhat greater up to 1998 (17%) than afterwards (12%).

A somewhat similar pattern to that for LRW and SUM was observed for URB upriver bright hatchery stock, except the URB BYERs reached low levels in the late 1970s (low of 22% in 1978) and highest levels in the 1980s (high of 81% in 1984). The overall average BYER was 57%. Incidental mortality ranged from 3–18%, averaging 9% of the total BY return. Incidental mortality made up an average of 16% of total fishing mortality in BYERs (range 10–45%), and it did not appear to show any time trend.

Releases of CWT fish for HAN (an upriver bright wild stock like URB) began with the 1984 BY, and BYERs decreased fairly steadily through the late 1990s, increased rapidly through the mid–

2000s, and then decreased again. The lowest BYER was 42% in 1998, the highest was 78% in 2004, and the average was 58%. Incidental mortality ranged from 3–11% and averaged 8% of the total returns and 13% of total fishing mortality (range from 7–20%), and did not appear to have a trend over the time series.

Releases of CWT fish for LYF began with the 1984 BY, and BYERs decreased fairly steadily through the 1990s, then mostly increased through the 2000s. The lowest BYER was 12% in 2004, the highest was 70% in 1984, and the average was 37%. Incidental mortality ranged from 3–10% and averaged 6% of the estimated total return, and averaged 18% of the total fishing mortality (range 13–25%), and did not appear to have a trend over the time series.

Although BYERs were multimodal for WSH, a spring stock on the Willamette River (Figure 2.50), almost all values for the 1970s and 1980s were higher than those for the 1990s and 2000s. But compared to the summer and fall run stocks, the entire time series of BYERs for this spring run stock were substantially lower. The highest BYER was observed for the 1983 BY (29%), the lowest for the 2004 BY (3%), and the average was 11%; only the Taku (10%) and Chilkat (11%) stocks, also spring run, have similarly low contribution rates to ocean fisheries. Incidental mortality for WSH ranged from 1–7%, averaging 3% of the total return, but was relatively high, averaging 27% of the estimated total fishing mortality. Also, IM appeared to be marginally higher in years up to 1998 (29% of BYER) than afterwards (23% of BYER).

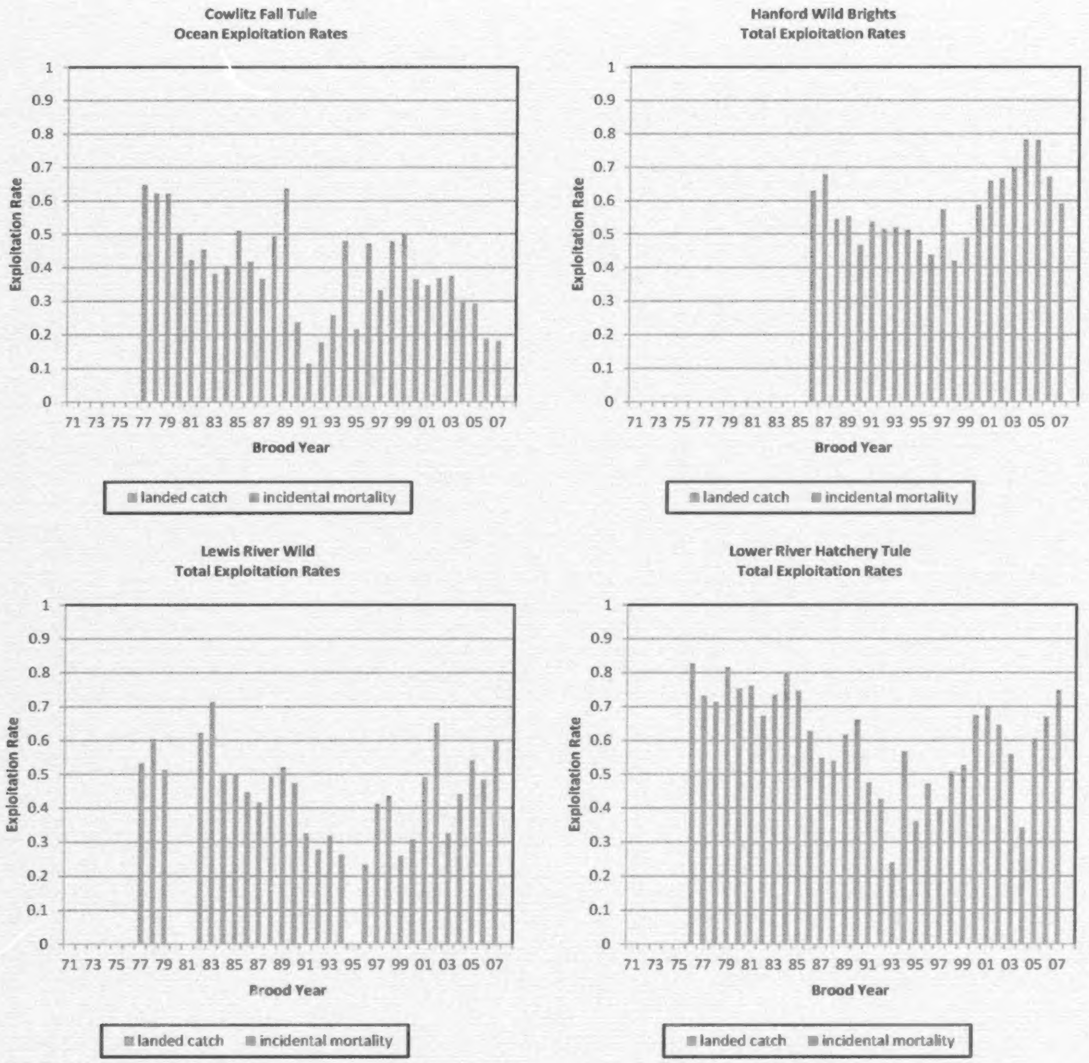


*Figure 2.49 Brood year exploitation rate for summer and fall Columbia River Stocks. Catch and incidental mortality are shown. Only completed brood years are included.*

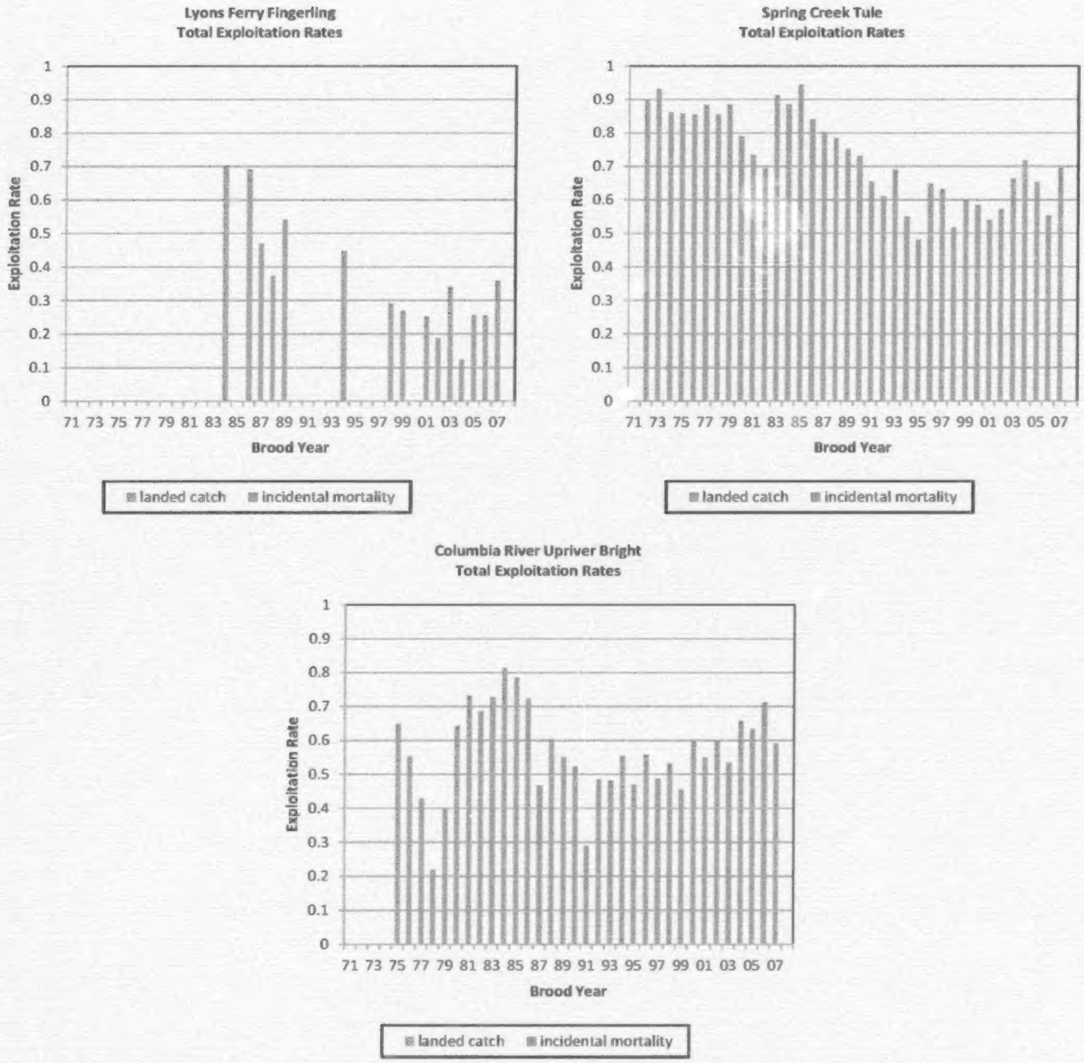


*Figure 2.49 Page 2 of 2.*

*Table 2.10 Summary of statistics generated by the 2012 CWT cohort analysis for Columbia River indicator stocks. Statistics include total mortality (catch plus incidental mortality) brood year exploitation rate (BYER), cohort survival rate to age 2, and calendar year (CY) percent distribution of the total mortality in the escapement for Agreement periods 1999–2008 and 2009–present.*

| | | | | | | CY % Escapement[1] | | |
|---|---|---|---|---|---|---|---|---|
| | | BYER (total mortality) | | Survival rate | | 1999–2008 | 2009–present | |
| Stock Abbrev | Indicator Stock Name | Mean (range) | Last complete BY | Mean (range) | Last complete BY | Mean (range) | Mean (range) | Last CY (if ≠ current) |
| CWF | Cowlitz Fall Tule[2] | 39% (11–65%) | 18% (2007) | 0.7% (0.06–3.56%) | 2.12% (2007) | 50% (24–65%) | 72% (61–90%) | 75% (2012) |
| HAN | Hanford Wild Brights | 58% (42–78%) | 59% (2007) | 1.17% (0.19–4.42%) | 2.85% (2007) | 44% (27–56%) | 28% (11–43%) | 24% (2012) |
| LRH | Lower River Hatchery Tule | 61% (24–83%) | 75% (2007) | 1.15% (0.02–9.48%) | 1.96% (2007) | 46% (29–71%) | 30% (25–33%) | 32% (2012) |
| LRW | Lewis River Wild | 45% (23–71%) | 60% (2007) | 2.21% (0.22–6.95%) | 1.79% (2007) | 56% (37–81%) | 46% (31–64%) | 48% (2012) |
| LYF | Lyons Ferry Fingerling | 37% (12–70%) | 36% (2007) | 1.78% (0.08–5.3%) | 4.95% (2007) | 74% (64–87%) | 57% (45–81%) | 45% (2012) |
| SPR | Spring Creek Tule | 43% (22–71%) | 58% (2007) | 5.41% (1.28–17.32%) | 6.83% (2007) | 63% (43–74%) | 46% (33–69%) | 46% (2012) |
| LYY | Lyons Ferry Yearling | 73% (48–94%) | 69% (2007) | 2.01% (0.13–8.47%) | 2.96% (2007) | 38% (29–50%) | 30% (26–39%) | 26% (2012) |
| SUM | Columbia Summer | 53% (19–74%) | 68% (2007) | 1.32% (0.07–4.83%) | 1.18% (2007) | 41% (28–59%) | 38% (24–52%) | 24% (2012) |
| URB | Columbia River Upriver Bright | 57% (22–81%) | 59% (2007) | 2.01% (0.09–7.55%) | 2.8% (2007) | 47% (40–61%) | 43% (31–57%) | 46% (2012) |
| WSH | Willamette Spring Hatchery[2] | 11% (3–29%) | 7% (2006) | 3.12% (0.74–7.63%) | 4.32% (2006) | 63% (53–75%) | 50% (43–60%) | 43% (2012) |

[1] % Escapement is not a measure of performance for the escapement indicator stock(s) associated with a given CWT indicator stock. See CTC (2013) for these details.

[2] BYER is ocean exploitation rate only.

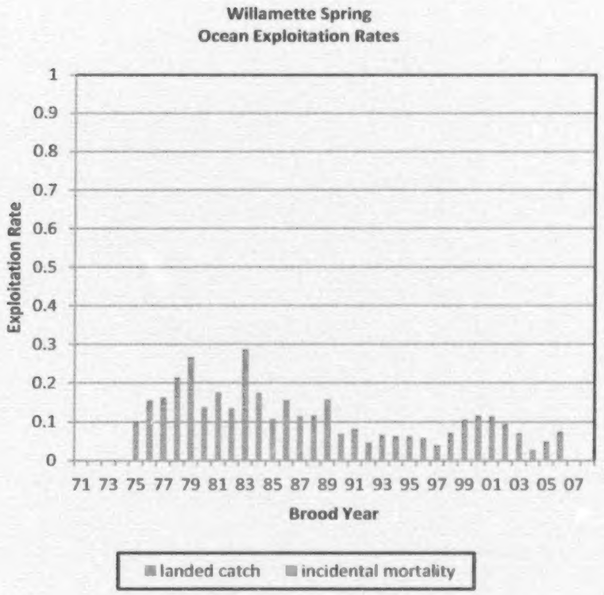


*Figure 2.50 Brood year exploitation rate for Willamette Spring Chinook. Catch and incidental mortality are shown. Only completed brood years are included.*

### 2.2.9.2 Survival Rates

There appears to be an increasing trend in relative survival during the recent years for the SUM stock, but for the other Columbia River fall Chinook stocks, it is difficult to discern any pattern other than variability over time (Figure 2.51). There is some correlation between the EV index from the PSC Chinook Model and the survival index from CWT recovery analysis for some Columbia River fall Chinook stocks, particularly for the CWF, LRH and SPR stocks.

The survival rate of Willamette Spring Chinook, from release to age 3 (i.e., due to the stock's entry into the ocean as yearlings) has varied widely across the last 30 BYs (Figure 2.52). WSH survival rates have averaged around 3% and ranged from 0.6–7.4%. The most recently complete BY registered a 1.6% survival rate. The EV and survival index are weakly correlated with r = 0.31.

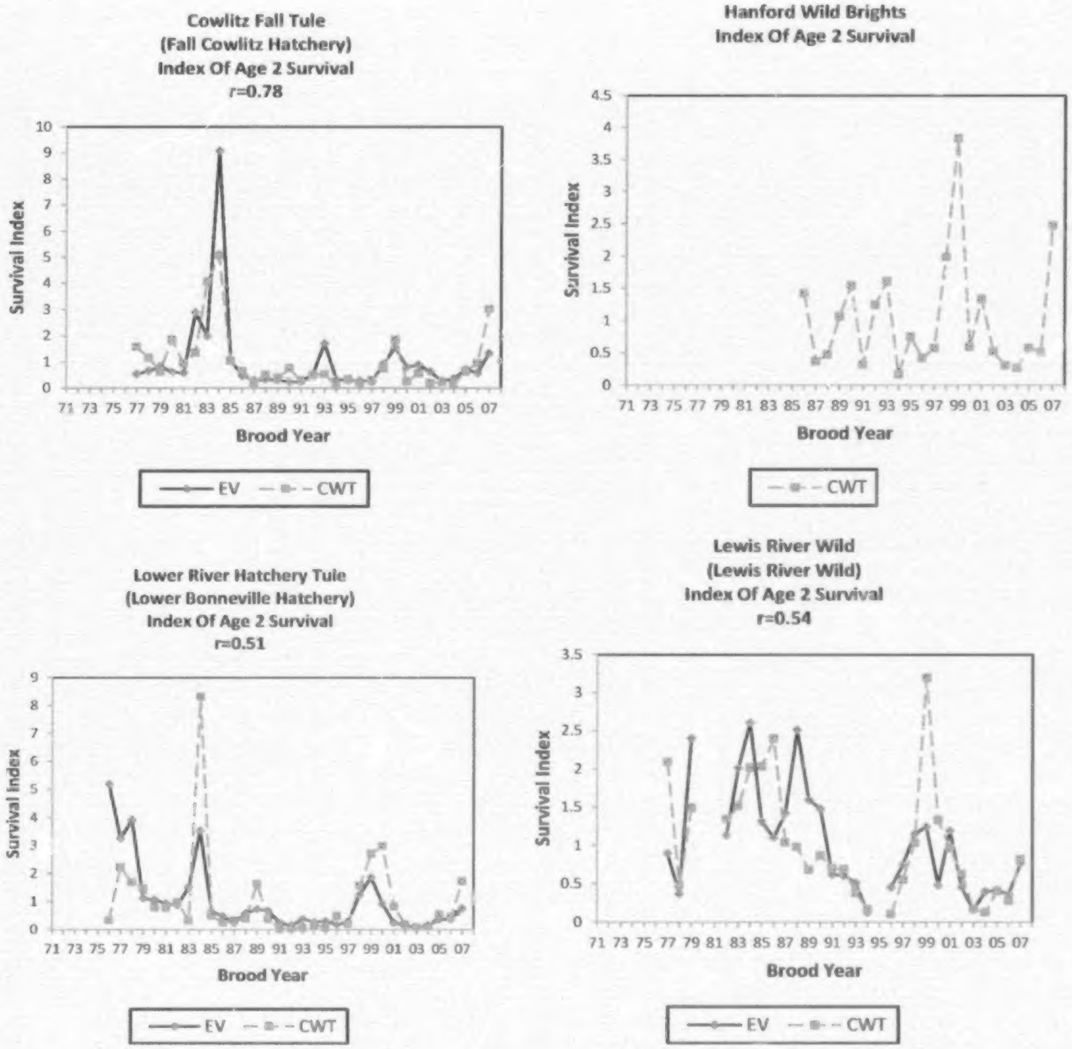


*Figure 2.51 CWT survival and EV indices and survival rate for summer and fall Columbia River Chinook stocks. r: Pearson correlation coefficient between CWT and EV survival indices.*

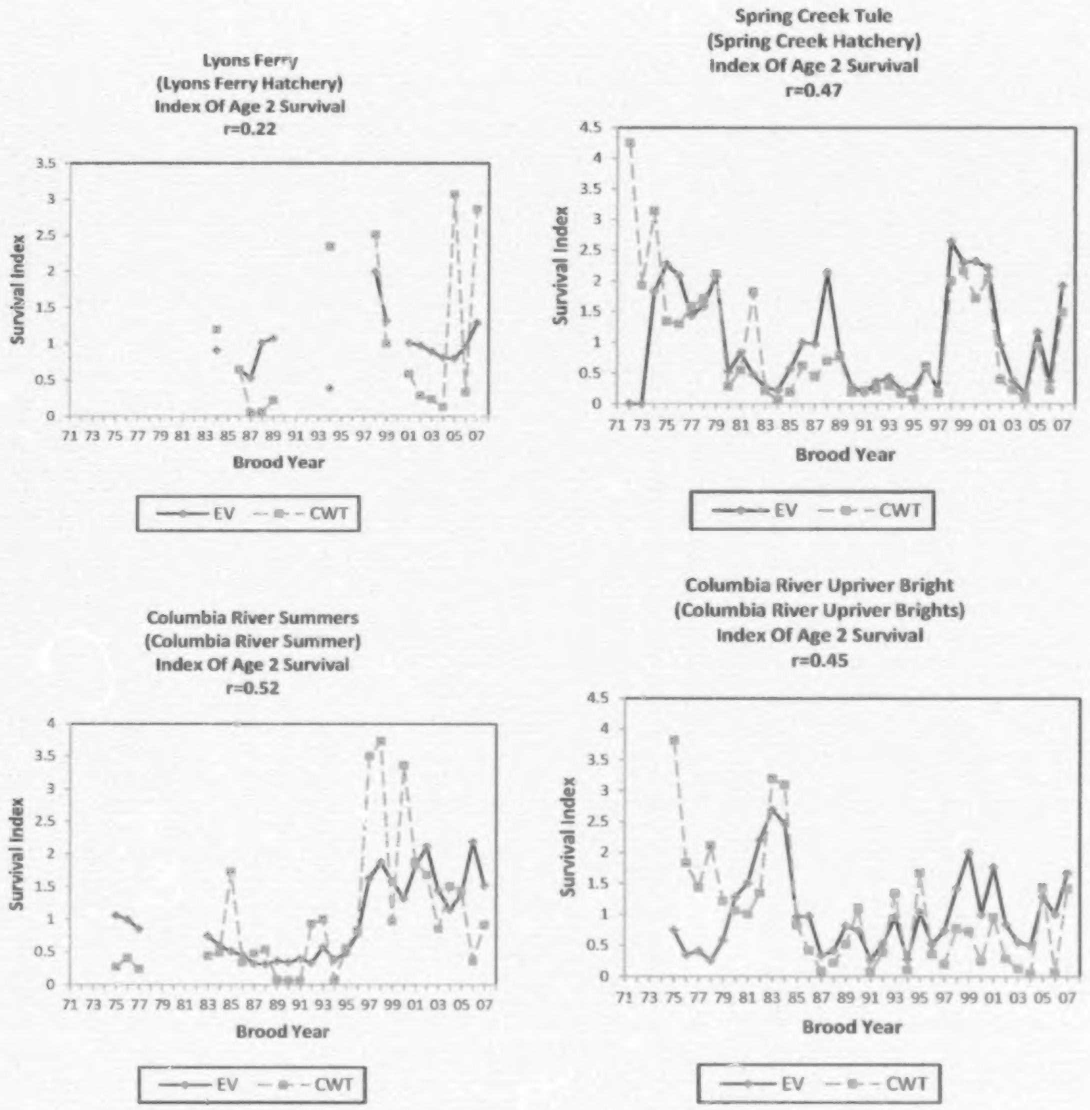
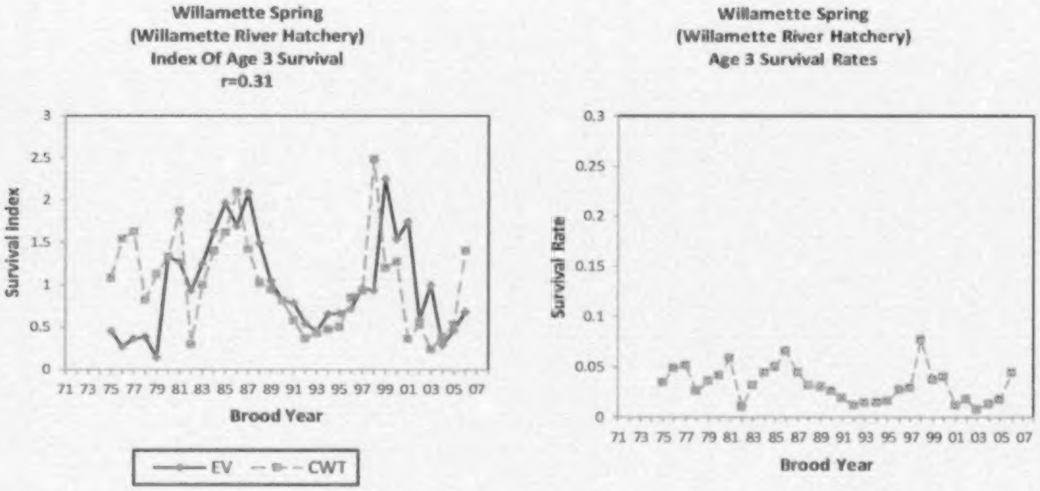


*Figure 2.51* *Page 2 of 2.*


Willamette Spring (Willamette River Hatchery) Index Of Age 3 Survival r=0.31

Willamette Spring (Willamette River Hatchery) Age 3 Survival Rates

*Figure 2.52 CWT survival and EV indices and survival rate for the Willamette River Spring Chinook indicator stock. r: Pearson correlation coefficient between CWT and EV survival indices.*

### 2.2.9.3 Mortality Distributions

For the Cowlitz Fall Tule CWF stock, escapement generally made up a slightly greater proportion of total mortality than did fisheries impacts. Since the 1999 PST Agreement, the escapement was larger during the recent time period (56.4%, 1999–present) than it was during the long-term time period (50.1%, 1981–present). Most of the catch in the recent average was distributed among four fisheries: 11.5% WA/OR Coast troll, 6.7% WA/OR Coast sport, 5.4% terminal sport, and 5.3% WCVI troll. In the long-term average distribution, terminal net had a larger impact than terminal sport: 10.9% WA/OR Coast troll, 8.6% WCVI troll, 6.0% terminal net, 5.8% WA/OR Coast sport, and 4.6% terminal sport. During 1979–1984, WCVI Troll, WA/OR Coast sport and terminal net had considerably greater impacts: 19.4% WCVI troll, 10.4% WA/OR Coast sport, and 10.2% terminal net. Details on the smaller fisheries can be found in Appendix C14. Please refer to Figure 2.53 for a graphical display of mortality distribution results for CWF and remaining stocks.

For the upriver bright wild HAN stock, escapement generally made up a smaller proportion of total run than did fisheries impacts. Escapement was slightly higher during the recent time period (39.4%, 1999–present) than it was during the long-term time period (41.7%, 1990–present). Most of the catch in the recent average was distributed among three fisheries: 17.8% terminal net, 18.0% SEAK troll, and 10.3% terminal sport. The long-term average was similar: 17.3% terminal net, 16.6% SEAK troll, and 8.9% terminal sport. Details on the smaller fisheries can be found in Appendix C24.

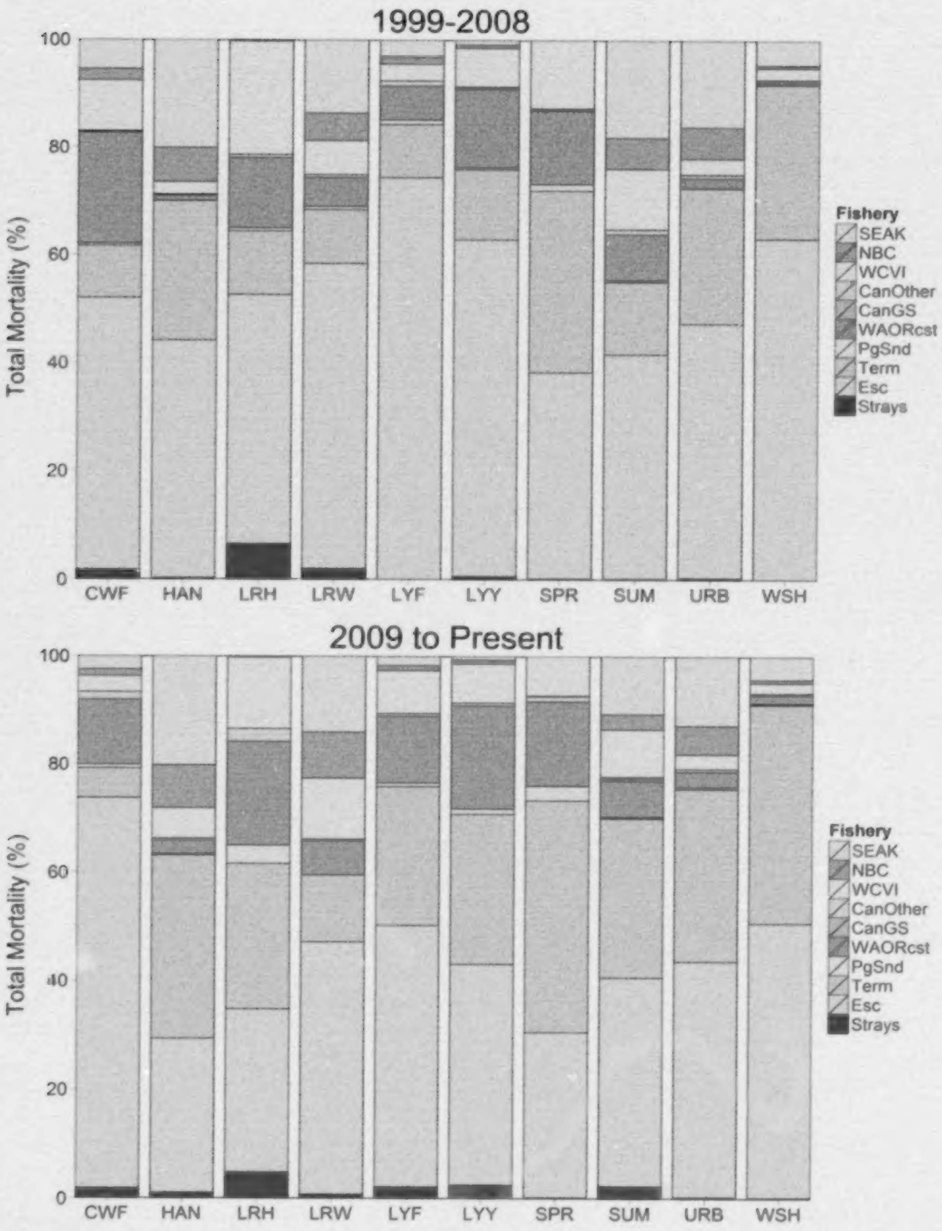


*Figure 2.53 Distribution of total mortality for Columbia River indicator stocks for the current (2009–present) and previous (1999–2008) agreement periods.*

For the Lower River Tule LRH stock, escapement generally made up a somewhat smaller percentage of total run than did fisheries impacts. Escapement was slightly higher during the recent time period (41.4%, 1999–present) than it was during the long-term time period (40.1%, 1979–present. Most of the catch in the recent average was distributed among four fisheries: 13.3% terminal net, 11.4% WCVI troll, 10.0% WA/OR Coast troll, and 7.5% WCVI sport. The long-term average catch, however, was distributed mostly among three fisheries with WCVI troll and WA/OR Coast troll playing a larger role: 17.8% WCVI troll, 12.3% WA/OR Coast troll, and 9.2% terminal net. WCVI sport had considerably less long-term impact (4.2%). Details on the smaller fisheries can be found in Appendix C32.

For the lower river bright LRW stock, escapement generally made up a greater proportion of total run than did fisheries impacts. Escapement percentages were similar during both the recent time period (53.5%, 1999–present) and the long-term time period (54.5%, 1981–present). There were two fisheries that took 5% or more of the total run in the recent average: 12.9% SEAK troll and 6.2% terminal sport (Columbia River). On the other hand, there were four such fisheries in the long-term average: 9.8% SEAK troll, 7.8% terminal sport, 6.7% terminal net, and 5.8% WCVI troll. During the 1985–1995 period, terminal net had considerably higher impact (12.0%). Details on the smaller fisheries can be found in Appendix C34.

For the Snake River LYF stock, escapement generally made up a larger proportion of the total run than did fisheries impacts. Escapement levels were similar for both the recent time period (67.3%, 1999–present) and the long-term time period (60.2%, 1989–present). There were only two fisheries with 5% or more of the distribution in the recent average: 11.4% terminal net, 5.4% WA/OR Coast troll, with 3.0% WCVI troll, and 3.6% terminal sport. The long-term average distribution had somewhat higher impacts by WA/OR Coast troll and WCVI troll fisheries, otherwise impacts were similar: 12.7% terminal net, 6.6% WA/OR Coast troll, 6.5% WCVI troll, and 3.6% terminal sport. Details on the smaller fisheries can be found in Appendix C36.

For the Spring Creek Hatchery Tule SPR stock, escapement generally made up a much smaller proportion of total calendar year run than did fisheries impacts. The percentage of escapement was higher during the recent time period (35.9%, 1999–present) than it was during the long-term time period (29.0%, 1979–present). There were three fisheries with 5% or more of the total run in the recent average, with impacts dominating in terminal net: 33.6% terminal net, 11.3% WA/OR Coast troll, and 7.6% WCVI troll. Combined, these three fisheries had greater impacts in the long-term average, resulting in the lower escapement percentage: 30.3% terminal net, 13.6% WCVI troll, and 12.4% WA/OR Coast troll. During 1979–1984, five fisheries had more than 5% impact: 25.5% WCVI troll, 24.0% terminal net, 17.4% WA/OR Coast troll, 5.9% WA/OR Coast sport, and 5.3% Puget Sound sport. Details on the smaller fisheries can be found in Appendix C70.

For the upriver SUM stock, escapement generally made up a somewhat smaller proportion of total calendar year run than did fisheries impacts. Escapement distribution was marginally less during the recent time period (40.6%, 1999–present) than it was during the long-term time period (46.1%, 1979–present). There were five fisheries with 5% or more of the total run in the recent average: 14.2% SEAK troll, 9.8% terminal net, 8.2% terminal sport, 7.9% WCVI troll and 6.0% WA/OR Coast troll. There were four such fisheries in the long-term average: 12.9% SEAK troll, 9.6% WCVI troll, 7.2% terminal net and 6.0% WA/OR Coast troll. During 1979–1984, four fisheries had 5% or more impact, and in all four cases the impacts were considerably higher than in the recent or long-term averages: 24.5% SEAK troll, 17.8% WCVI troll, 8.6% NBC troll, and 5.7% Canada net. Details on the smaller fisheries can be found in Appendix C84.

For the upriver right URB stock, escapement generally was less than fisheries impacts. Relative escapement was higher during the recent time period (45.92%, 1999–present) than it was during the long-term time period (43.6%, 1979–present). There were three fisheries with 5% or more of the total run in the recent average: 17.4% terminal net, 13.1% SEAK troll and 9.6% terminal sport. However, there were five fisheries in the long-term average with 5% or greater impact: 19.2% terminal net, 13.1% SEAK troll, 6.0% North Central BC troll, 5.9% terminal sport, and 5.0% WCVI troll. During 1979–1984, SEAK troll (17.9%) had greater impact but terminal net (10.0%) and terminal sport (0.3%) had considerably lower impact. Details on the smaller fisheries can be found in Appendix C90.

For the Willamette Spring Hatchery WSH stock, escapement percentages were greater than fisheries impacts. Percentages of escapements were higher during the recent time period (59.4%, 1999–present) than they were during the long-term time period (55.7%, 1979–present). There were two fisheries with 5% or more of the total run in the recent average: 25.5% terminal sport, and 6.6% terminal net. There were three such fisheries in the long-term average: 26.0% terminal sport, 6.2% terminal net, and 5.7% SEAK troll. During 1979–1984, NBC troll (6.0%) had much greater impact but terminal sport (18.3%) had lower impact. Details on the smaller fisheries can be found in Appendix C96.

#### 2.2.9.4 Regional Summary for Columbia River Stocks

Columbia River stocks' BYERs over the full time series of CWT data showed a wide range (Table 2.10). They were particularly high for SPR (mean 73%, range 48–94%) and particularly low for WSH (mean 11%, range 3–29%); however, the latter do not include terminal fishing, also the case for CWF. At the midpoint of the mean BYERs (i.e., four stocks with lower mean BYER, four with higher mean BYER) was SUM (mean 53%, range 19–74%). For the last complete BY, BYER was again lowest for WSH (7%) but was higher for LRH (75%) than for SPR (69%). The midpoint value of BYER for the last complete BY was for LYF (58%). Four stocks (CWF, LYF, SPR, and WSH) had BYERs lower in the last complete BY than the time series mean. The other five stocks (HAN, LRH, LRW, SUM, and URB) had last complete BYER higher than the time series mean.

Survival rates also varied widely over the time series (Table 2.10). Both the lowest and highest survivals were observed for LRH (range 0.02–9.5%). The narrowest survival range was observed for LRH (0.06–3.6%). The lowest and highest means were estimated for CWF (0.7%) and WSH (3.1%), the latter being the only stock that has primarily yearling releases. The stock with the midpoint mean survival was LYF (1.8%), and its survival range was fairly typical (0.08–5.3%). For most stocks, survival was relatively higher for the last complete BY: seven stocks (CWF, HAN, LRH, LYF, SPR, URB, and WSH) had survival lower than the time series mean, and two stocks (LRW and SUM) had survival greater than the time series mean.

We compared escapement percentages between the groups of years (1999–2008, 2009–present) following the last two Agreements (Table 2.10). During 1999–2008, the lowest mean escapement percentage was observed for SPR (mean 38%, range 29–50%), and the highest mean escapement percentage was observed for LYF (mean 74%, range 68-87%). At the midpoint was URB (mean 47%, range 40–61%). During 2009–present, the lowest mean escapement percentage was observed for HAN (mean 28%, range 11–42%), and the highest mean escapement percentage was observed for CWF (mean 72%, range 61–90%).

## 2.2.10 North Oregon Coast Stocks

There are two hatchery-origin CWT indicator stocks representing the production of Chinook salmon on the Oregon coast, the Salmon River Hatchery (SRH) release group and the Elk River Hatchery (ELK) release group. Both groups are fall ocean type subyearling stocks which are recovered earliest at the total age of 2. The SRH release group is used to indicate those metrics ascribed to the Northern Oregon Coast aggregate, while the ELK release group indicates those metrics affiliated with the Mid-Oregon Coast aggregate. There have been relatively consistent releases of a CWT group of Chinook salmon from the SRH since 1976, with the exception of no releases in 1981. There has been consistent, if sometimes small (prior to 1989) releases from the ELK since 1977. Release group size for the ELK was somewhat normalized to higher levels after 1990. Average release group size between 1977 and 1989 was approximately 37,000, and between 1990 and 2007 this increased to an average of approximately 184,000. The ELK CWT group has benefited from the support of the Coded Wire Tag Improvement Program (CWTIP) for the past several years. Without the support of this, or a similar, program, it is unlikely that either the release group size or their terminal recoveries can be supported into the foreseeable future.

### 2.2.10.1 Brood Year Exploitation Rates

BYERs for both the SRH and ELK exploitation rate indicator stocks include only those mortalities attributable to ocean fisheries (Figure 2.54; Table 2.11). The BYER has averaged 36% (range 23–63%) for the SRH releases. Data representing both BY 1977 and 1978 from the ELK hatchery are anomalous and not likely indicative of reasonable portrayals of this stock. BYER for the ELK has averaged 21% (range 10–32%), excluding BY 1977 and 1978. There is no discernible trend through time regarding the percentage of IM occurring in ocean fisheries for either SRH or ELK River hatchery releases.

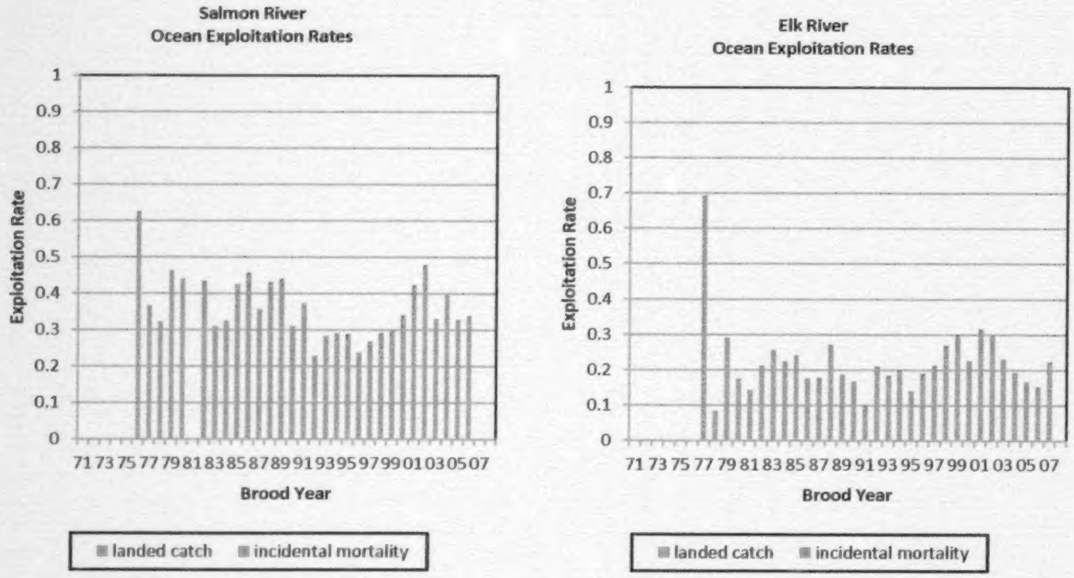


*Figure 2.54 Brood year exploitation rate (ocean only) for Oregon Coast CWT indicator stocks. Catch and incidental mortality are shown. Only completed brood years are included.*

*Table 2.11 Summary of statistics generated by the 2012 CWT cohort analysis for Oregon Coast indicator stocks. Statistics include total mortality (catch plus incidental mortality) brood year exploitation rate (BYER), cohort survival rate to age 2, and calendar year (CY) percent distribution of the total mortality in the escapement for Agreement periods 1999–2008 and 2009–present.*

| | | BYER (total mortality) | | Survival rate | | CY % Escapement[1] | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 1999–2008 | 2009–present | |
| **Stock Abbrev.** | **Indicator Stock Name** | **Mean (range)** | **Last complete BY** | **Mean (range)** | **Last complete BY** | **Mean (range)** | **Mean (range)** | **Last CY (if ≠ current)** |
| ELK | Elk River[2] | 22% (8–69%) | 22% (2007) | 8.55% (1.1–34.2%) | 6.82% (2007) | 44% (29–62%) | 56% (39–68%) | 49% (2012) |
| SRH | Salmon River[2] | 36% (23–63%) | 34% (2006) | 5.62% (0.63–10.8%) | 3.44% (2006) | 39% (19–57%) | 36% (33–41%) | 35% (2012) |

[1] % Escapement is not a measure of performance for the escapement indicator stock(s) associated with a given CWT indicator stock. See CTC (2013) for these details.

[2] BYER is ocean exploitation rate only.

### 2.2.10.2 Survival Rates

Survival rates for both SRH and ELK Hatchery stocks are to age 2. Survival rates for ELK have been variable and averaged 8.6%, with a range of 1–34% (Figure 2.55; Table 2.11). Generally, ELK has had quite robust survival, averaging approximately 10%. This is among the highest average survival tracked coastwide by the CTC, exceeded only by the average survival displayed by CHI (12%). Survival rates for SRH have been generally declining with a long-term average of 5.6%, with survival from the first three BYs averaging 7%, while the last three complete BY survivals averaged 4%. Still, SRH has relatively robust ocean survival compared to many of the other stocks tracked coastwide by the CTC. The EV index and the survival index are weakly correlated for the ELK with r = 0.24. The EV index and the survival index are moderately correlated for the SRH with r = 0.58.

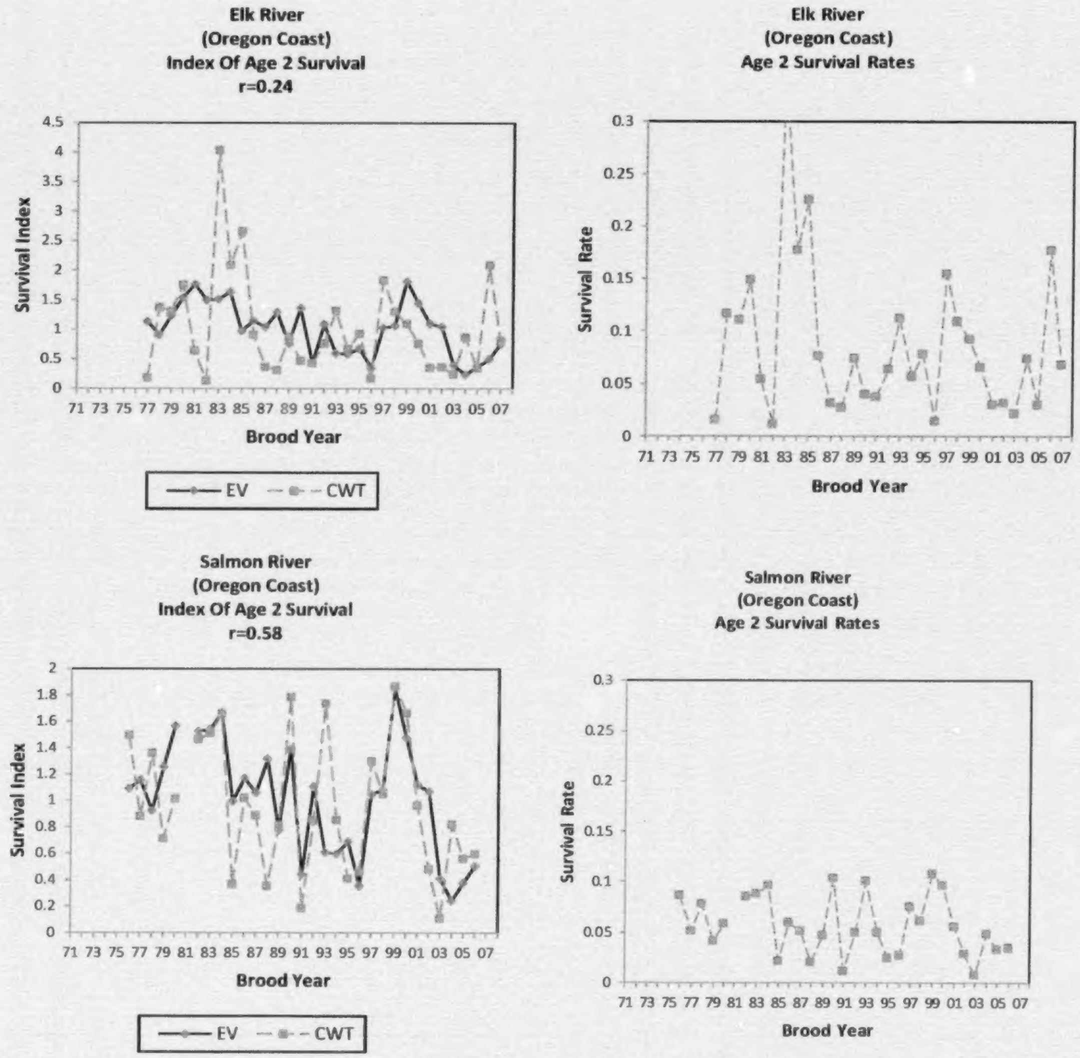


*Figure 2.55 CWT survival and EV indices and survival rate for Oregon Coast indicator stocks. r: Pearson correlation coefficient between CWT and EV survival indices.*

### 2.2.10.3 Mortality Distributions

An average of 39% of SRH (Appendix C78) mortality is attributed to escapement for the 1979–present time series (Table 2.11), and an average of 44% of the ELK (Appendix C18) mortality is attributed to escapement for the 1981–2011 time series (Table 2.11). *Mortality to escapement* is the proportion of AEQ mortalities in a calendar year attributable to spawning escapement. Both stocks exhibit slight variation in the proportion which escapes to spawn through the time series, but there is no visible trend. Judging from 1999–present calendar year data, the largest impacts on the SRH stock occur in terminal sport (28%), SEAK troll fisheries (17%), NBC troll (7%), and NBC sport (4%). During the same time period, the largest impacts on the ELK stock occur in ISBM troll WA/OR (20%), terminal sport fisheries (16%). SEAK troll (8%), and NBC troll (4%). WCVI troll used to be a larger component of the impacts on the ELK stock (6%: 1979–1984), but has impacted this stock less in more recent years (2%: 1999–2011). These impact distributions are displayed graphically in Figure 2.56.

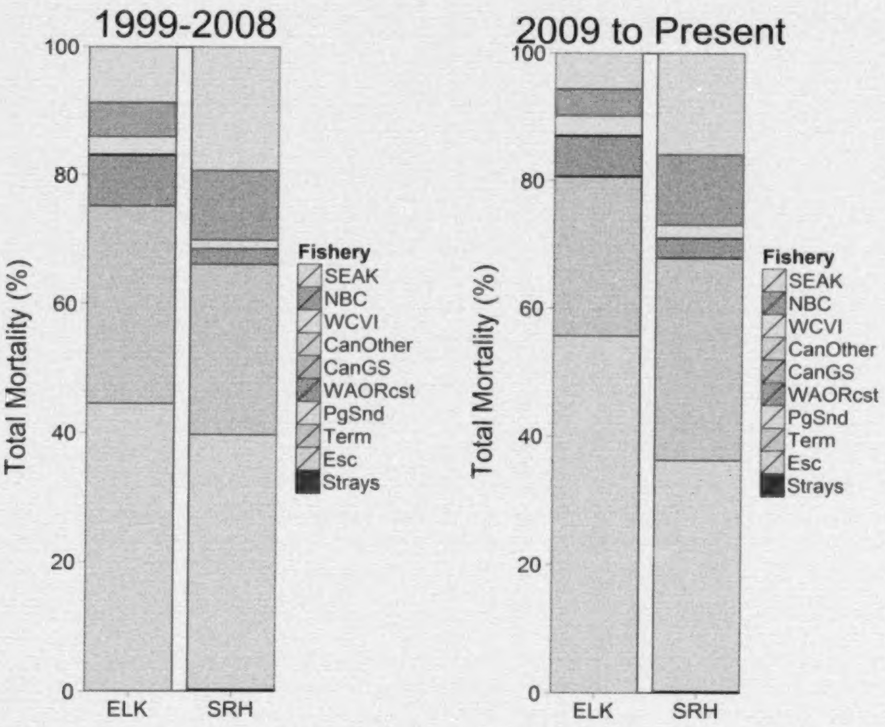


*Figure 2.56 Distribution of total mortality for Oregon Coast indicator stocks for the current (2009–present) and previous (1999–2008) agreement periods.*

# 3 PSC CHINOOK MODEL CALIBRATION AND OUTPUT

The annual calibration of the PSC Chinook Model provides preseason AIs for the three AABM fisheries, postseason AIs for the previous year, and preseason ISBM indices. The 2014 preseason AIs are used to estimate the allowable catch of Treaty Chinook salmon in AABM fisheries for 2014. Postseason AIs are used to determine the previous (2013) season's allowable catches and to evaluate compliance in AABM fisheries. The Agreement specifies that total AEQ in ISBM fisheries will be limited to no greater than 63.5% for Canada and 60% for the US relative to that observed in the base period (1979–1982) for the indicator stocks identified in Attachments IV and V that have CTC-accepted management objectives, but are not achieving them. The ISBM estimates annual exploitation rates relative to the base period for those fisheries. Forecasts of the 2014 ISBM indices are computed using the PSC Chinook Model. Postseason ISBM indices for 2012 (all ISBM stocks) and 2013 (Canadian ISBM stocks) are computed using results of the ERA. The Agreement specifies that the postseason ISBM indices estimated through ERA of CWT recoveries will be used to assess compliance in ISBM fisheries; however, postseason indices are computed on a two-year lag because some CWT data are not reported until two years later. Additionally, postseason CWT-based ISBM indices provide insight on the performance of the (preseason) model-generated index.

## 3.1 MODEL CALIBRATION

This section describes the calibration data and procedures used. For reference, a list of indicator stocks and fisheries in the model is provided in Appendix A. Estimation of the model base period parameters is described in the draft model documentation (CTC AWG 1991). For 2014, the model used was the same as used during the PST negotiations (CLB 9812), with the actual catches, escapements, and other data through 2013 added. In addition, CTC-agreed escapement goals were used where available and the form of the Ricker production function was adjusted for new stocks with CTC-agreed goals.

### 3.1.1 Calibration Data

The first step in the annual calibration process is to gather new or revised data to update the model input files. For example, the file containing run size data is updated as preseason forecasts and postseason estimates become available, since model predictions are sensitive to preseason forecasts and postseason estimates of terminal runs. Months in which forecasts are available for each stock, and the month the final return estimate becomes available, are presented in Table 3.1.

The model is recalibrated annually to incorporate observed data from the previous year and available abundance forecasts for the current year. In addition, recalibration may also occur when significant changes in one or more of the following model input files are made.

1. BSE (base): This file contains basic information describing the structure of the model, i.e., the number and names of stocks and fisheries, age classes, the base period, identification of terminal fisheries, and stock production parameters. This file may be modified annually to incorporate productivity parameters that correspond to new CTC-agreed escapement goals.

2. CEI (ceiling): This file contains historical catch data for the 19 fisheries that are modeled as ceiling or catch quota fisheries (as opposed to fisheries modeled solely through control of exploitation rates) through the most recent fishing season.
3. CNR (Chinook salmon nonretention): Data used by the model to estimate mortalities during CNR periods are read from the CNR file. The data in the CNR file depends on which method is used to calculate CNR mortality. It may include direct estimates of encounters during the CNR period or indicators of fishing effort in the CNR period relative to the retention period.
4. ENH (enhancement file): For 13 hatchery stocks and one natural stock (Lower Strait of Georgia Naturals) with supplementation, this file contains productivity parameters as well as the differences (positive or negative) in annual smolt production relative to the Base Period. Additional discussion of the productivity parameters may be found in the draft model documentation (CTC AWG 1991).
5. FCS (forecast): Agency supplied annual estimates of terminal run sizes or escapements as well as preseason forecasts are contained in the FCS file. Age-specific information is used for those stocks and years with age data (Table 3.2). For those stocks with externally provided forecasts of abundance in 2014, management agencies used two general methods to predict terminal returns or escapements.
    a. Sibling Models: Empirical relationships between abundance (commonly measured as terminal run size) of age *a* fish in calendar year CY and the comparable abundance of age *a*+1 fish in year CY+1 are used to predict abundance in 2013 from data collected in previous years (forecast type S in Table 3.2).
    b. Average Return Rate Models: Return rates of adults by age from smolts or parents are averaged over past BYs, then these averages are used to discount abundance of smolts or parents for BYs that will be exploited in 2014 (forecast type R in Table 3.2).
6. FP (fishery policy): This file contains scalars specific to year, fishery, stock, and age that are applied to base period fishery exploitation rates. The FPs are used to scale annual fishery exploitation rates relative to the model base period and can be used for a variety of purposes. For example, for the ocean areas of the Washington and Oregon North of Cape Falcon (WA/OR) troll fishery, the FPs are used to model differential impacts on Columbia River and Puget Sound stocks as the proportion of the catch occurring in the Strait of Juan de Fuca varies. The source of the FPs is generally the reported catch fishery index computed from CWT data in the annual ERA or the ratios of harvest rates computed from terminal area run reconstructions.
7. IDL (interdam loss): The IDL file contains stock-specific conversion factors for the Columbia River Summer, Columbia Upriver Bright, Spring Creek Tule, and Snake River Fall stocks provided each year by Columbia River fishery managers. The factors represent the fraction of the stock that can be accounted for after mainstem dam passage in the Columbia River; losses can be attributed to direct mortality at the various

dams, mortality in the reservoirs between dams, fall-backs, tailrace spawning, and other factors. The interdam loss factor is equal to one minus the conversion factor.

8. IM (changes in incidental mortality rates): The IM file contains the IM rates by fishery for legal and sublegal fish. These rates differ from those used in the base period due to alterations in gear, regulations, or fishery conduct.
9. MAT (maturity and AEQ factors): The MAT file has annual estimates of maturation rates and AEQ factors for 12 stocks (AKS, BON, CWF, FRL, GSH, LRW, ORC, RBH, RBT, SPR, URB, and WSH). These estimates replace the base period rates in the BSE file. The annual estimates are obtained from the annual ERA. Average values are used for years beyond the last year for which estimates are available (due to incomplete broods and the one year lag for completion of the annual ERA).
10. PNV (proportion nonvulnerable): A PNV file is created for each fishery for which a size limit change has occurred since the model base period. Each file contains age-specific estimates of the proportion of fish not vulnerable to the fishing gear or smaller in length than the minimum size limit. The PNVs were estimated from empirical size distribution data; in some instances independent surveys of encounter rates were used to adjust the PNV for age-2 fish to account for the proportion of the cohort that was not vulnerable to the fishing gear.
11. STK (stock): This file contains the stock- and age-specific starting (base period) cohort sizes, the base period exploitation rates on the vulnerable cohort for each model fishery, maturation schedules, and AEQ factors. This file is updated if new stocks or fisheries are added, new CWT codes are used to represent distribution patterns of existing model stocks, or a re-estimation of base period data occurs. Modification of this file will result in a model different from that used in the negotiations (CLB 9812).

The calibration is controlled through a file designated with an OP7 conversion extension.

*Table 3.1* *Month of the year when agencies are able to provide final return estimates for the previous year and preseason forecasts of abundance for the next fishing year.*

| Model Stock | Month Final Return Estimate Available | Month(s) Forecast Available |
|---|---|---|
| Alaska South SE | January | None |
| North/Central BC | November | None |
| WCVI Natural | January | February |
| WCVI Hatchery | January | February |
| Upper Strait of Georgia | January | None |
| Lower Strait of Georgia Hatchery | December | None |
| Lower Strait of Georgia Natural | December | None |
| Fraser Early | January | None |
| Fraser Late | February | February |
| Nooksack Spring | June | February |
| Nooksack Fall (Samish) | June | February |
| Snohomish Wild | June | February |
| Skagit Wild | June | February |
| Puget Sound Natural Fingerling | June | February |
| Stillaguamish Wild | June | February |
| Puget Sound Hatchery Fingerling | June | February |
| Puget Sound Hatchery Yearling | June | February |
| Washington Coastal Wild | June | March[1] |
| Washington Coastal Hatchery | June | March[1] |
| Cowlitz Spring Hatchery | June | December |
| Willamette River Hatchery | June | December |
| Columbia River Summer | September | February |
| Fall Cowlitz Hatchery | April | February, April[2] |
| Spring Creek Hatchery | April | February, April |
| Lower Bonneville Hatchery | April | February, April |
| Upriver Brights | April | February, April |
| Snake River Wild Fall | April | April |
| Mid-Columbia River Bright | April | February, April |
| Lewis River Wild | April | February, April |
| Oregon Coast | February | February |

[1] Normally forecasts are not available for the model calibration, but these were available in 2012.

[2] A preliminary ocean escapement forecast is released in February. An updated ocean escapement forecast reflecting the ocean fishery option adopted by the Pacific Fisheries Management Council is released in April.

*Table 3.2 Methods used to forecast the abundance of stocks in the PSC Chinook Model.*

| | Forecast Characteristics | | | |
|---|---|---|---|---|
| **Model Stock** | **Forecast Type[1]** | **Preseason Age-specific** | **Postseason Age-specific** | **Comments** |
| Alaska South SE | C | - | Yes | Calibrated to escapement |
| North/Central BC | C | - | No | Calibrated to terminal run |
| WCVI Hatchery + Natural (RBH and RBT model stocks) | S | Yes | Yes | Robertson Creek Hatchery forecasts plus expansion for other WCVI stocks based on ratio of terminal run sizes |
| Upper Strait of Georgia | C | - | Partial | Calibrated to escapement |
| Lower Strait of Georgia Hatchery | C | - | Yes | Calibrated to escapement to GSH hatchery systems and Squamish River |
| Lower Strait of Georgia Natural | C | - | Yes | Calibrated to escapement to Cowichan and Nanaimo Rivers |
| Fraser Early | C | - | No | Calibrated to terminal run |
| Fraser Late | S | Yes | Yes | Combined forecasts of escapements for Harrison River and Chilliwack Hatchery |
| Nooksack Spring | R | No | No | Calibrated to escapement |
| Nooksack Fall (Samish) | R | No | No | Recent year average return rate |
| Snohomish Wild | R | No | No | Recruits per Spawner |
| Skagit Wild | R | Yes | Yes | Average cohort return rate |
| Puget Sound Natural Fingerling | R | No | No | Calibrated to terminal run |
| Stillaguamish Wild | R | No | No | Recruits per Spawner |
| Puget Sound Hatchery Fingerling + Yearling | R | No | No | Age-specific forecasts not available for all components |
| Washington Coastal Wild | R | No | No | Average return rate |
| Washington Coastal Hatchery | R | No | No | Average return rate |
| Cowlitz Spring Hatchery | S | Yes | Yes | Prediction is to mouth of tributary streams |
| Willamette River Hatchery | S | Yes | Yes | Prediction is to mouth of Willamette River |
| Columbia River Summer | S | No | No | Run reconstruction used to estimate Columbia River mouth return |
| Spring Creek Hatchery | S | Yes | Yes | Run reconstruction used to estimate Columbia River mouth return |
| Lower Bonneville Hatchery | S | Yes | Yes | Run reconstruction used to estimate Columbia River mouth return |
| Upriver Brights | S | Yes | Yes | Run reconstruction used to estimate Columbia River mouth return |
| Lyons Ferry (Snake River Wild Fall) | R | No | No | Calibrated to escapement to Lower Granite. |
| Mid-Columbia River Bright | S | Yes | Yes | Run reconstruction used to estimate Columbia River mouth return |
| Lewis River Wild | S | Yes | Yes | Run reconstruction used to estimate Columbia River mouth return |
| Oregon Coast | S | Yes | Yes | Weighted average age composition from four index rivers |

[1] Externally provided forecast type codes are S = sibling; R = return rate; C = model internally estimated projection.

### 3.1.2 Calibration Procedures

An objective of the calibration procedure is to estimate stock- and BY-specific EV scalars. The calibration uses an iterative algorithm to estimate the EV scalars for each BY and model stock to account for annual variability in natural mortality in the initial year of ocean residence. EV scalars are used to adjust age-1 abundances estimated for each stock and BY from escapements in combination with the base period spawner-recruit functions. Fishing impacts and natural mortalities are then applied through model processes. EVs also adjust for biases resulting from errors in the data or assumptions used to estimate the base period parameters for the spawner-recruit functions.

EVs are estimated through the following steps for stocks calibrated to age-specific terminal run sizes:

1. Predicted terminal runs are first computed for each year using the input files discussed above and the base period stock-recruitment function parameters (i.e., EV stock productivity scalars set equal to 1).
2. The ratio ($SC_{BY}$) of the observed terminal run and the model predicted terminal run from the previous step is computed for each BY. For example, if the estimated and model predicted terminal runs for the 1979 brood were 900 and 1,500 age-3 fish in 1982, 4,000 and 4,500 age-4 fish in 1983, and 1,000 and 1,500 age-5 fish in 1983, the ratio would be computed as

$$SC_{BY} = \frac{\sum_{a=Minage}^{Maxage}(ObservedTerminalRun)_a}{\sum_{a=Minage}^{Maxage}(ModelPredictedTerminalRun)_a}$$

*Equation 3.1*

$$SC_{BY} = \frac{900+4000+1000}{1500+4500+1500}$$

*Equation 3.2*

In the absence of age-specific estimates of the terminal run, the components are computed by multiplying the total terminal run by the model predictions of age composition.

3. The EV for iteration *n* and brood year *BY* is computed as:

$$EV_{n,BY} = EV_{n-1,BY} * SC_{BY}$$

*Equation 3.3*

4. Steps 1–3 are repeated iteratively until the absolute change in the EVs for all stocks is less than a predetermined tolerance level (0.05). The tolerance level can be changed if more precise agreement is desired:

$$\left|\frac{EV_{n,BY} - EV_{n-1,BY}}{EV_{n-1}}\right| < 0.05$$

*Equation 3.4*

Several options for the calibration are provided in the OP7 control file. The options include the ability to control the BYs for which the EVs are estimated in each iteration, and also the type of convergence criteria. For the 2014 preseason calibration, in each iteration EVs were estimated for all BYs. Convergence was defined at an EV change tolerance level of 0.05.

Stock-specific calibration options are specified in the FCS file and discussed below.

- Minimum Number of Age Classes: Data for all age classes will not be available when the EVs are estimated for recent, incomplete broods. Since considerable uncertainty may exist in a single data point, application of the calibration algorithm can be restricted to cases in which a specific minimum number of age classes are present.
- Minimum Age: Considerable uncertainty often exists in the estimates of terminal runs or escapements for younger age classes, particularly age 2. The minimum age class to include in the calibration algorithm is specified in the FCS file.
- Estimation of Age Composition: Age-specific estimates of the terminal run or escapement may not be available. An option is provided to estimate the age composition using base period maturation and exploitation rates.

The 2014 calibration was completed in two stages (as it is normally conducted) to facilitate computation of the average exploitation rates and incorporation of the agency forecasts. The Stage 1 calibration provided initial estimates of exploitation rate scalars for fishing years 1979–2012 using updated catch and escapement data through 2012. Average exploitation rate scalars ($\overline{FP}$) were then computed and used as input values for the 2013 and 2014 fisheries in the Stage 2 calibration, except that the forecasts for the WCVI and Fraser Late (FRL) stocks already accounted for changes in the ocean fisheries.

The $\overline{FP}$ for each model fishery was obtained from the Stage 1 calibration using the following formula (subscripts follow those defined in Table 2.3):

$$\overline{FP}_{a,s,CY,f} = \frac{\sum_{CY=CY_{start}}^{CY_{end}} RT_{CY} * FP_{s,a,CY,f}}{(CY_{end} - CY_{start})} \quad \textit{Equation 3.5}$$

The term $RT_{CY}$ refers to the ratio of the catch quota in the current year to the catch that would be predicted given current abundance, current size limits, and base period exploitation rates. The range of years used to compute the $\overline{FP}$ varied between stocks and was fishery- and age-specific. The input files used in the Stage 2 calibration were identical to those used in Stage 1 with two exceptions: the average exploitation rate scale factors for each fishery were inserted into the $\overline{FP}$ file for 2013, and the Stage 1 EVs were used as starting values for the Stage 2 calibration.

To determine the acceptability of a calibration by the CTC (i.e., whether an annual calibration is deemed final by the CTC), several results are examined.

1. Accuracy of the reconstructed catches in the fisheries (these values will consistently differ from the actual catches if the calibration is not able to exactly recreate the actual catches in the years 1979 through 1984, the model years used prior to implementation of the ceiling algorithm)

2. Accuracy of model predicted terminal runs or escapements relative to the data used for calibration of each stock
3. Comparison of model predicted age structure in terminal runs or escapements with the data used for calibration (consistent biases in age structure are addressed by changing maturation rates)
4. Patterns in the EVs compared with marine survival patterns generated by the annual ERA
5. Comparison of CWT-based and model estimates of fishery harvest rate indices,
6. Comparison of model estimates of mortality distributions for individual stocks to those generated from the annual CWT-based ERA
7. Comparison of model estimated AIs to the AIs previously estimated by model CLB 9812

Calibration usually involves an iterative process until a judgment is made by the CTC that an acceptable fit to all the data was achieved. This decision usually involves an inspection, discussion, and trial-and-error process. The determination of whether or not further calibrations are necessary is based principally on the significance of deviations from observed or estimated values for stocks and fisheries most relevant to the issues to be evaluated and on the time constraints established for completion of the calibration.

### 3.1.3 Key Calibration Outputs

The PSC Chinook Model was originally constructed as a tool to evaluate the effect of fishery management actions on the rebuilding of depressed Chinook salmon stocks. However, since the implementation of the 1999 PST Agreement, the primary purpose of the model has been to enable abundance-based management in the PST through the production of fishery abundance indices. The model generates preseason projections of abundance indices (AIs) for the SEAK, NBC, and WCVI AABM fisheries and postseason estimates of the AIs that enable evaluations of AABM performance (i.e., pre- versus postseason AI and allowable catch comparisons). For each AABM fishery (*f*), an abundance index (AI) is computed for the upcoming fishing year (*CY*) as

$$AI_{f,CY} = \frac{\sum_s \sum_a Cohort_{s,a,CY} ER_{s,a,f}(1-PNV_{a,f})}{\sum_s \sum_a Cohort_{s,a,BP} ER_{s,a,f}(1-PNV_{a,f})}, \qquad \textit{Equation 3.6}$$

where $Cohort_{s,a,CY}$ and $Cohort_{s,a,BP}$ are preseason (projected) and base period (*BP*, fishing years 1979–1982) abundances of model stocks (*s*), by age (*a*), respectively. Thus, the AI is simply a ratio of the estimated total catch at present and base period abundance levels given a base period fishing pattern. Given the preseason AI projections, the estimated allowable catches are then set for the three AABM fisheries according to the terms specified in Appendix B of Chapter 3, Annex IV of the 2009 Chinook Agreement.

In addition to generating AIs, the model provides other information of immediate relevance to PSC management, as well as for use in efforts aimed at assessing its accuracy. First, the model provides fishery-specific projections of AEQ total mortality for model stocks, thereby allowing for estimation of potential ISBM fishery harvests on a preseason basis. Additionally, these mortality estimates provide a means for computing a PSC Chinook Model analog to CWT exploitation rates which can be compared for model validation/verification purposes. Second, the model provides estimates on the stock composition of AABM and ISBM fishery catches, thereby providing a means to quantitatively estimate the relative contribution different stocks make to particular fisheries during the current as well as past fishing year.

### 3.1.4 Changes from Previous Calibration Procedures

In an effort to more accurately represent the fishery shaping currently occurring in the North BC Troll fishery (to avoid WCVI Chinook stocks using genetic stock identification), changes were made to the North Troll FP-ascii file in the 2014 PSC Chinook Model calibration CLB1402. Stock-specific FP values were added to the FP-ascii file for the driver stocks in the fishery, which included data for the WCVI Natural and WCVI Hatchery stocks as well as data for the Columbia River Upriver Bright stock and the Oregon Coastal Natural stock. FP information for these specific stocks was added to represent the reduction in the exploitation rates on the WCVI Chinook stocks, while at the same time representing the resulting change in the exploitation rates of the other driver stocks in the fishery.

## 3.2 MODEL CALIBRATION RESULTS

### 3.2.1 Overview of 2013 Calibration Process

The CTC AWG met in Seattle during the week of March 17, 2014, to produce the PSC Chinook Model calibration for use in the upcoming fishing year. Two model calibrations were completed, differing in key input files. An initial calibration (Clb1401) that was completed and discussed during the face-to-face meeting contained up-to-date escapement and terminal runs for most stocks. It also contained up-to-date catches, Fishery Policy (exploitation rate) scalars, and interdam loss factors. However, terminal run forecasts for the Fraser Late and WCVI stocks were missing, and the maturation rate and AEQ scalars had not been updated from the prior year's calibration. The AWG convened several webinars the following week and agreed to endorse the second calibration that was produced (Clb1402) which included up-to-date estimates of maturation rates, AEQ scalars, and updated terminal run forecasts for the Fraser Late and WCVI stocks. On April 1, the CTC produced its annual memo describing the year's calculated pre- and postseason AIs based on this model calibration and circulated it amongst the PSC and associated management agencies.

### 3.2.2 AABM Fishery Calibration Results

#### 3.2.2.1 AABM Abundance Indices and Associated Catches

The PST specifies that AABM fisheries are to be managed through the use of preseason AIs, where a specific estimate of allowable harvest level corresponds to a given AI for each fishery. Preseason AIs that were used to establish harvest management targets are listed in Table 3.3. The 2013 preseason AI for the SEAK troll fishery is 1.20, for the NBC troll fishery it is 1.10, and for the WCVI troll fishery it is 0.77. The year 2013 was the fifth year of the 2009 PST Agreement that reduced catches and associated harvest rates in Southeast Alaska (15%) and West Coast of Vancouver Island (30%) AABM fisheries from the allowable AABM catch levels in the 1999 PST

Agreement in response to coastwide conservation concerns. The NBC AABM fishery retained the same allowable catch and harvest rates of the 1999 PST Agreement. If the CTC determines that inseason methods provide an improved estimate of the abundance relative to preseason indicators alone, inseason adjustments of preseason catch limits are permitted.

*Table 3.3 Abundance Indices for 1999–2014 for the SEAK, NBC, and WCVI AABM fisheries. Postseason values for each year are from the first postseason calibration following the fishing year.*

| | SEAK | | NBC | | WCVI | |
|---|---|---|---|---|---|---|
| **Year** | **Preseason** | **Postseason** | **Preseason** | **Postseason** | **Preseason** | **Postseason** |
| 1999 | 1.15 | 1.12 | 1.12 | 0.97 | 0.60 | 0.50 |
| 2000 | 1.14 | 1.10 | 1.00 | 0.95 | 0.54 | 0.47 |
| 2001 | 1.14 | 1.29 | 1.02 | 1.22 | 0.66 | 0.68 |
| 2002 | 1.74 | 1.82 | 1.45 | 1.63 | 0.95 | 0.92 |
| 2003 | 1.79 | 2.17 | 1.48 | 1.90 | 0.85 | 1.10 |
| 2004 | 1.88 | 2.06 | 1.67 | 1.83 | 0.90 | 0.98 |
| 2005 | 2.05 | 1.90 | 1.69 | 1.65 | 0.88 | 0.84 |
| 2006 | 1.69 | 1.73 | 1.53 | 1.50 | 0.75 | 0.68 |
| 2007 | 1.60 | 1.34 | 1.35 | 1.10 | 0.67 | 0.57 |
| 2008 | 1.07 | 1.01 | 0.96 | 0.93 | 0.76 | 0.64 |
| 2009 | 1.33 | 1.20 | 1.10 | 1.07 | 0.72 | 0.61 |
| 2010 | 1.35 | 1.31 | 1.17 | 1.23 | 0.96 | 0.95 |
| 2011 | 1.69 | 1.62 | 1.38 | 1.41 | 1.15 | 0.90 |
| 2012 | 1.52 | 1.24[1] | 1.32 | 1.15[1] | 0.89 | 0.76[1] |
| 2013 | 1.20[1] | 1.63 | 1.10[1] | 1.51 | 0.77[1] | 1.04 |
| 2014 | 2.57 | | 1.99 | | 1.20 | |

[1] Due to changes in calibration procedures (reviewed in section 3.1.4), 2012 postseason (CLB 1309) and 2013 preseason (CLB 1308) AIs are based on different calibrations; the procedures and assumptions CLB 1309 mirror those used during the 2012 preseason calibration.

Postseason AIs are more accurate estimates of the abundance indices for the AABM fisheries than are the preseason AIs. Thus overage or underage of AABM landed catches is assessed relative to the final allowable catches based on postseason AIs. Postseason AIs for 1999–2013 are listed in Table 3.3.

The 2009 PST Agreement specifies the allowable catch for various values of the AI for each fishery. Allowable catches for 1999–2008 were from Table 1 in the Chinook Annex to the 1999 PST Agreement. In the 2009 PST Agreement, the relationship between the AI and the allowable catch changed for SEAK and WCVI; thus the allowable catches since 2009 were derived from Table 1 of the Chinook Annex to the 2009 PST Agreement. The allowable treaty catch by fishery and year based on pre- and postseason AIs and the observed treaty catches are given in Table 3.4 and are shown in Figures 3.1– 3.6; in Figure 3.1–3.3, the solid line represents the relationship between AIs and allowable catch under Table 1 of the annex.

*Table 3.4* *Preseason allowable catches for 1999–2014, and postseason allowable catches and observed catches for 1999–2013, for AABM fisheries. Postseason values for each year are from the first postseason calibration following the fishing year.*

| **PST Treaty Allowable and Observed Catches** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **SEAK (T, N, S)[1]** | | | **NBC (T, S)[1]** | | | **WCVI (T, S)[1]** | | |
| **Year** | **Preseason Allowable Catch** | **Postseason Allowable Catch** | **Observed Catch** | **Preseason Allowable Catch** | **Postseason Allowable Catch** | **Observed Catch** | **Preseason Allowable Catch** | **Postseason Allowable Catch** | **Observed Catch** |
| 1999 | 192,800 | 184,200 | 198,842 | 145,600 | 126,100 | 86,726 | 128,300 | 107,000 | 38,540 |
| 2000 | 189,900 | 178,500 | 186,493 | 130,000 | 123,500 | 31,900 | 115,500 | 86,200 | 88,617 |
| 2001 | 189,900 | 250,300 | 186,919 | 132,600 | 158,900 | 43,500 | 141,200 | 145,500 | 120,304 |
| 2002 | 356,500 | 371,900 | 357,133 | 192,700 | 237,800 | 150,137 | 203,200 | 196,800 | 157,920 |
| 2003 | 366,100 | 439,600 | 379,519 | 197,100 | 277,200 | 191,657 | 181,800 | 268,900 | 173,561 |
| 2004 | 383,500 | 418,300 | 417,019[2]<br>421,666 | 243,600 | 267,000 | 241,508 | 192,500 | 209,600 | 215,252 |
| 2005 | 416,400 | 387,400[3] | 388,137[3] | 246,600 | 240,700 | 243,606 | 188,200 | 179,700 | 199,479 |
| 2006 | 346,800 | 354,500[3] | 359,566[3] | 223,200 | 200,000 | 215,985 | 160,400 | 145,500 | 145,511 |
| 2007 | 329,400 | 259,200[3] | 327,697[3] | 178,000 | 143,000 | 144,235 | 143,300 | 121,900 | 140,614 |
| 2008 | 170,000 | 152,900[3] | 172,341[3] | 124,800 | 120,900 | 95,647 | 162,600 | 136,900 | 145,726 |
| 2009[4] | 218,800 | 176,000[3] | 227,533[3] | 143,000 | 139,100 | 109,470 | 107,800 | 91,300 | 124,617 |
| 2010 | 221,800 | 215,800[3] | 230,250[3] | 152,100 | 160,400 | 136,613 | 143,700 | 142,300 | 139,047 |
| 2011 | 294,800 | 283,300[3] | 290,297[3] | 182,400 | 186,800 | 122,660 | 196,800 | 134,800 | 204,232 |
| 2012 | 266,800 | 205,100 | 242,034 | 173,600 | 149,500 | 120,307 | 133,300 | 113,800 | 134,468 |
| 2013 | 176,000 | 284,900 | 183,891 | 143,000 | 220,300 | 115,914 | 115,300 | 178,000 | 113,598 |
| 2014 | 439,400 | | | 290,300 | | | 205,400 | | |

[1] T = troll, N = net, and S = sport.

[2] The lower value resulted from subtracting a disputed terminal exclusion catch for the Stikine River in 2004. Catch accounting has since been defined in the Transboundary Agreement.

[3] Values changed because the method used to partition gillnet catch into large and nonlarge fish has changed. This change affects the computation of the terminal exclusion, add-on, and treaty catch.

[4] This is the first catch year in which fisheries operated under the provisions of the 2009 Agreement.

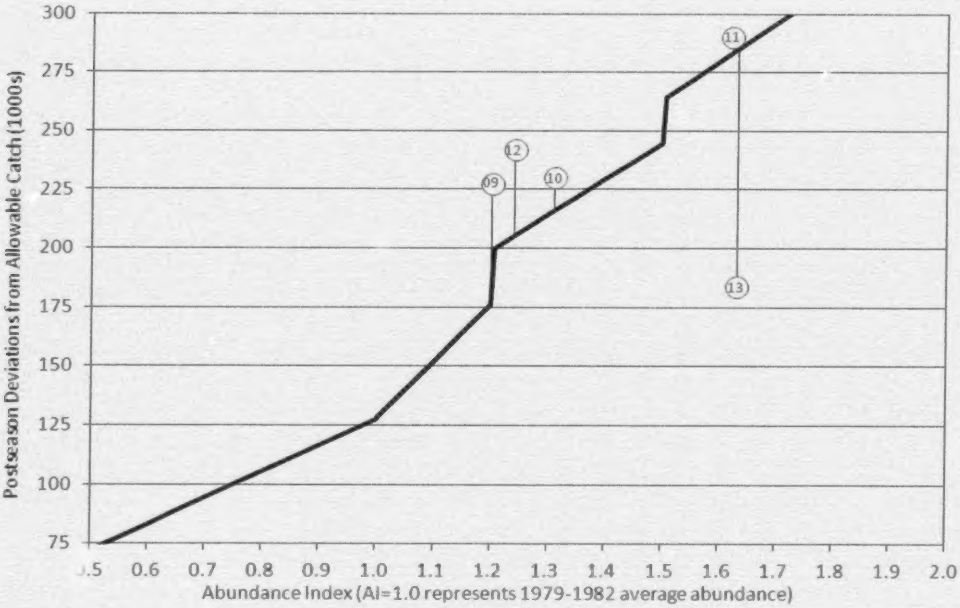


*Figure 3.1 Postseason deviations from allowable catch levels in the SEAK AABM fishery.*

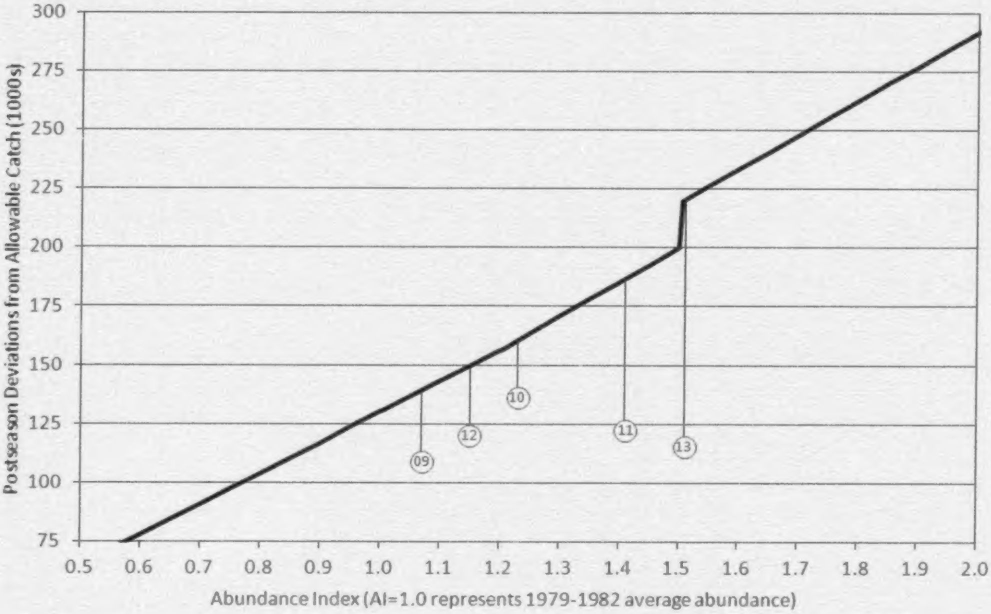


*Figure 3.2 Postseason deviations from allowable catch levels in the NBC AABM fishery.*

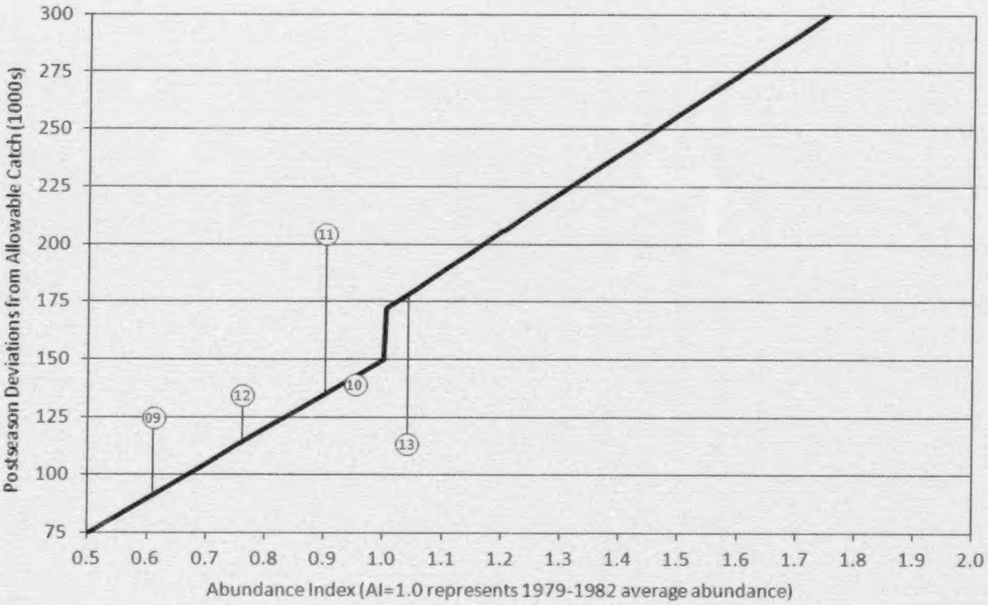


*Figure 3.3 Postseason deviations from allowable catch levels in the WCVI AABM fishery.*

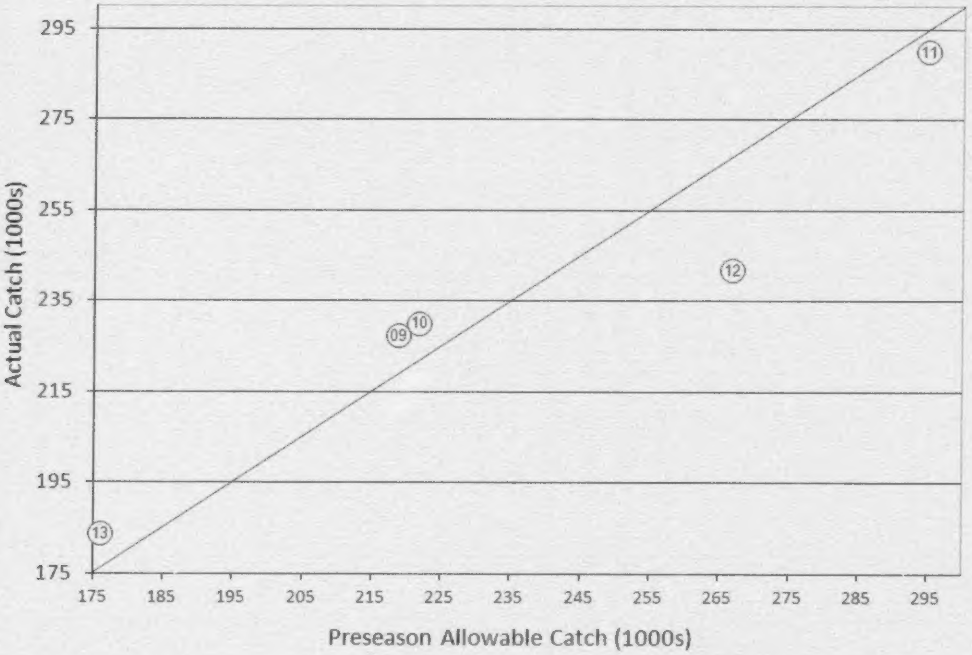


*Figure 3.4 Deviations from preseason allowable catch in the SEAK AABM fishery.*

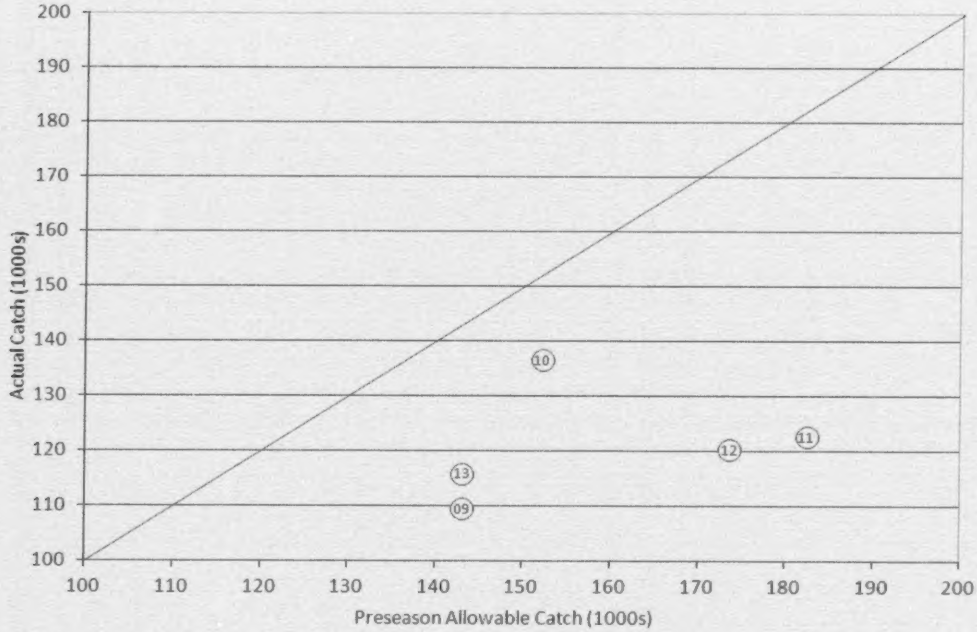


*Figure 3.5* ***Deviations from preseason allowable catch in the NBC AABM fishery.***

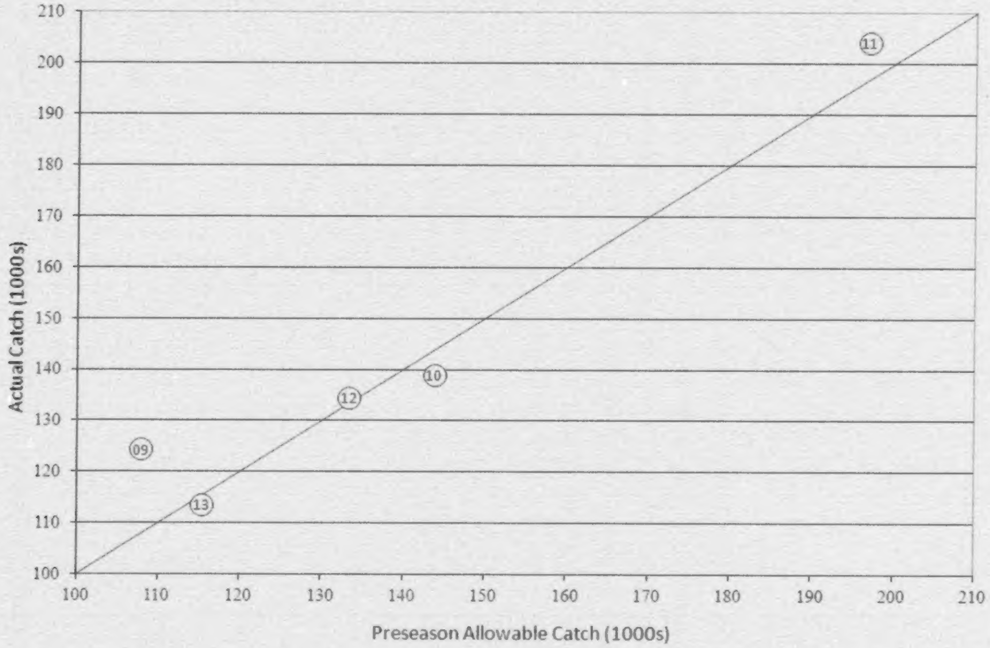


*Figure 3.6* ***Deviations from preseason allowable catch in the WCVI AABM fishery.***

### 3.2.2.2 Stock composition of abundances available in AABM fisheries, 1979–2013

The majority of catches in each AABM fishery are often comprised of only a small subset of the 30 model stocks listed in Appendix A. Figures 3.7–3.9 show the relative abundance for each major stock (resulting from CLB 1402). In general, postseason AIs had a peak during the late 1980s (1987–1989) and another in 2003 and 2004.

The major model stocks contributing to the SEAK AIs are Columbia River Upriver and Mid-Columbia Bright (URB-MCB), WCVI Natural and Hatchery, Oregon Coastal, North/Central BC, and Fraser Early (Figure 3.7). The *Other* category is mainly Washington Coast Hatchery and Natural, Columbia River Summers, and Upper Strait of Georgia.

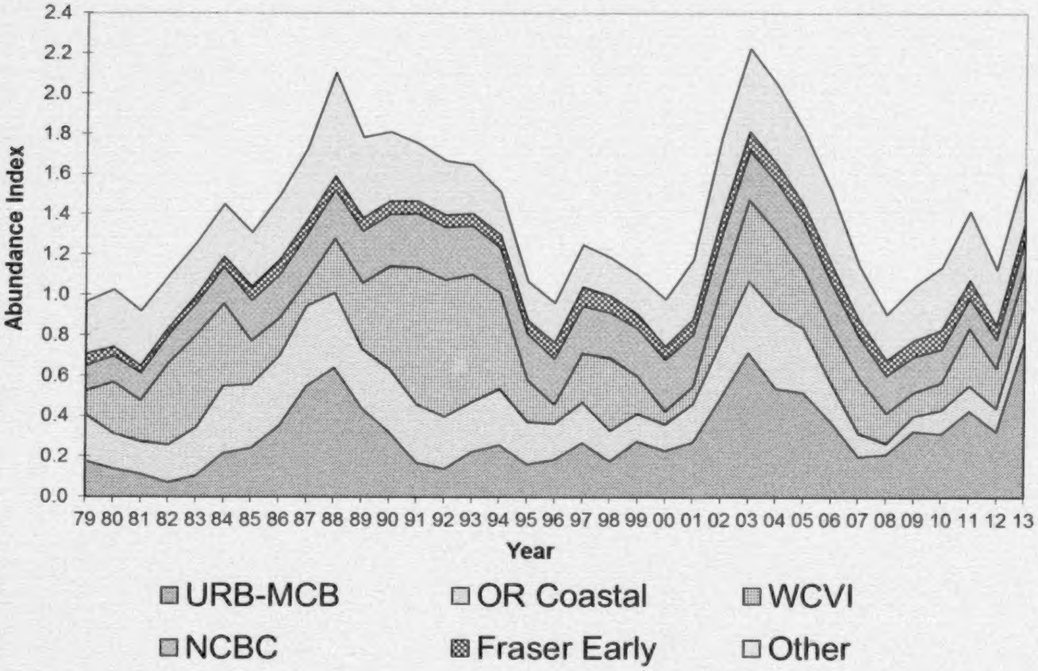


*Figure 3.7 Stock composition of the annual abundance indices for the SEAK troll fishery from CLB 1402.*

The major model stock groups contributing to the NBC AABM fishery AIs are Oregon Coastal, URB-MCB, WCVI Natural and Hatchery, North/Central BC, and Fraser Early (Figure 3.8). The *Other* category consists primarily of Washington Coast Hatchery and Natural, Willamette Springs, and Upper Strait of Georgia stocks.

The major model stock groups in the AI for the WCVI fishery are Columbia River Tules, Puget Sound, Fraser Lates, URB-MCB, and WCVI Natural and Hatchery (Figure 3.9). The *Other* category is comprised primarily of Oregon Coast, Columbia Summers, and Washington Coastal.

For model-generated stock composition details for all fisheries (AABM + ISBM), please see Appendix E.

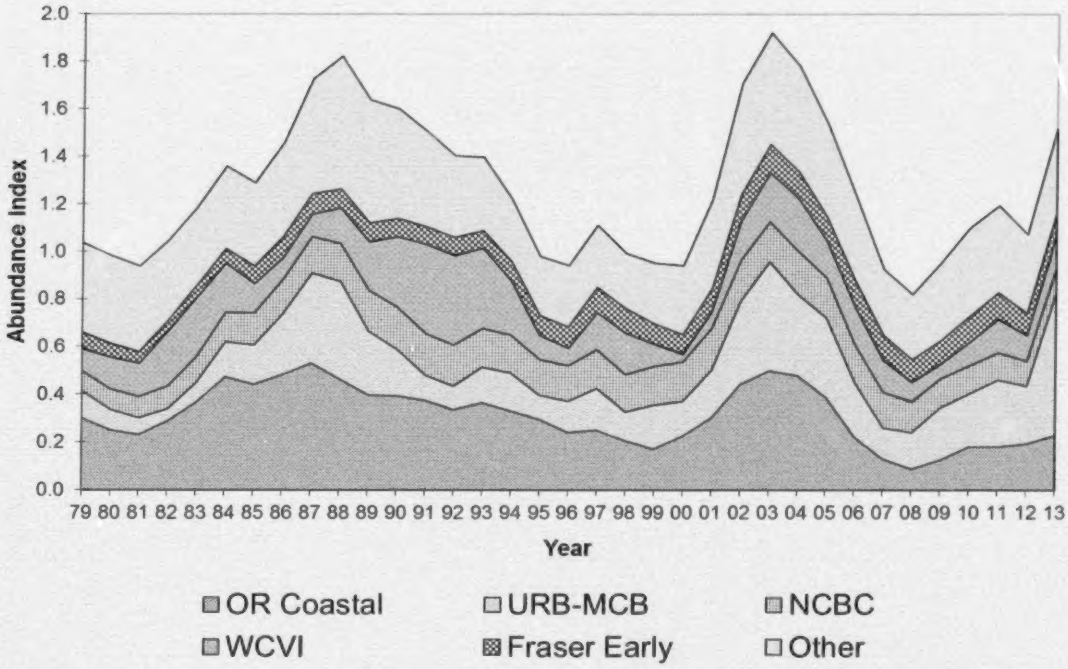


*Figure 3.8 Stock composition of the abundance indices for the Northern BC troll fishery from CLB 1402.*

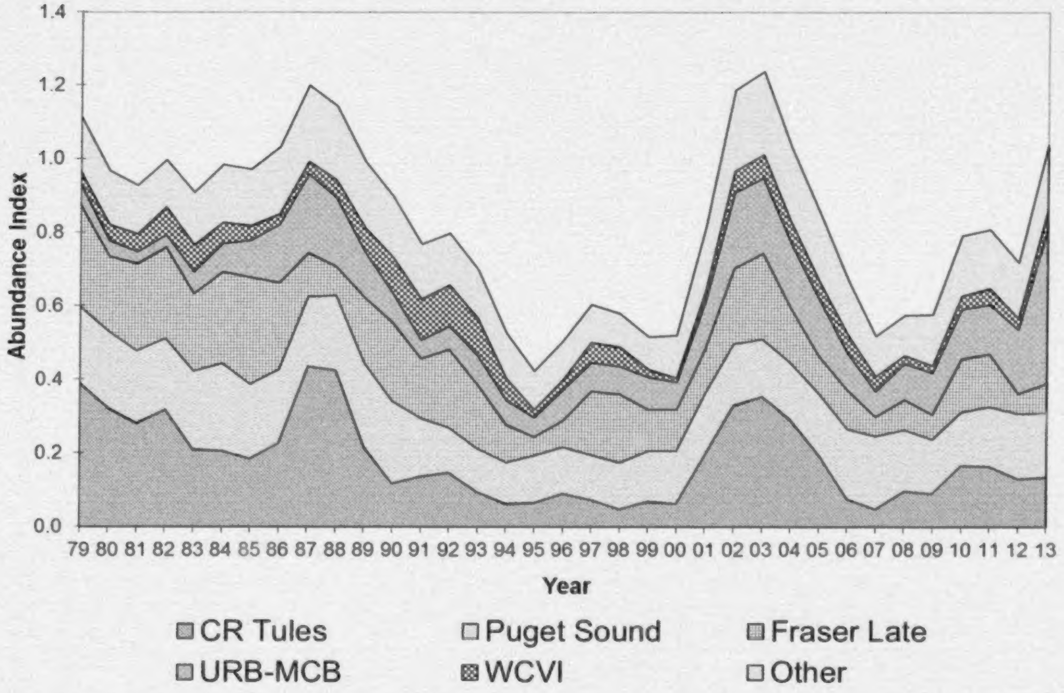


*Figure 3.9 Stock composition of the abundance indices for the WCVI troll fishery from CLB 1402.*

### 3.2.2.3 Pre- versus Postseason AI Changes (Overages and Underages)

Until an approach for full implementation of overage/underage provisions has been developed and accepted by the PSC, the Commissioners have instructed the CTC to track and report overages and underages relative to agreed-upon harvest objectives.

Per Treaty subparagraph 11(a)(i), AIs and associated allowable catches from the first postseason model calibration for a given fishing year are used to track catch overages and underages. Table 3.5 shows the annual differences between the postseason allowable catches and the observed catches in AABM fisheries for 1999–2013, as well as the cumulative differences. In SEAK, the 2013 catch was 35.5% below the postseason allowable catch, and the cumulative differences were 0.4% below the cumulative postseason allowable catch. In NBC, the 2013 catch was 47.4% below the postseason allowable catch and the cumulative differences were 29.5% below the cumulative postseason allowable catch. In WCVI, the 2013 catch was 36.2% below the postseason allowable catch and the cumulative differences were 4.8% below the cumulative postseason allowable catch. The SEAK, NBC, and WCVI AABM fisheries have been over the preseason allowable catch 10 (SEAK), 3 (NBC), and 9 (WCVI) of the last 15 years.

Overages and underages in AABM catches, relative to the first postseason calibration for a fishing year (Table 3.5), can arise due to imprecision in the inseason management system, errors in the preseason calibration process (e.g., forecast error), or a combination of the two. The relative influence of each was evaluated by inspecting differences in actual landed catch and allowable catches from both the preseason and postseason calibrations (Table 3.6). In 2013, regarding the inseason management system, the actual landed catch was greater than the preseason allowable catch by 7,891 Chinook salmon in SEAK. The actual landed catch was 27,086 less than the preseason allowable catch in NBC and 1,702 less in WCVI. In terms of the postseason allowable catches for evaluation of the provisions of the PST subparagraph 11(a)(i), actual catches were less than the postseason allowable catches by 101,009 Chinook salmon in SEAK, by 104,386 in NBC and by 64,402 in WCVI.

*Table 3.5* ***Deviations in numbers of Chinook salmon caught and percentages from allowable catches derived from the postseason AI for PST AABM fisheries in 1999–2013. Postseason values for each year are from the first postseason calibration following the fishing year.***

| | SEAK | | NBC | | WCVI | |
|---|---|---|---|---|---|---|
| **Year** | **Number of Fish** | **Percent Difference** | **Number of Fish** | **Percent Difference** | **Number of Fish** | **Percent Difference** |
| 1999 | 14,642 | 7.9% | −39,374 | −31.2% | −70,587 | −66.0% |
| 2000 | 7,993 | 4.5% | −91,600 | −74.2% | 15,238 | 17.7% |
| 2001 | −63,381 | −25.3% | −115,400 | −72.6% | −27,830 | −19.1% |
| 2002 | −14,767 | −4.0% | −87,663 | −36.9% | −31,764 | −16.1% |
| 2003 | −60,081 | −13.7% | −85,543 | −30.9% | −93,079 | −34.6% |
| 2004 | −1,281 | −0.3%[1] | −25,492 | −9.5% | 7,024 | 3.4% |
| | 3,366 | 0.8% | | | | |
| 2005 | 737 | 0.2% | 2,906 | 1.2% | 22,962 | 12.8% |
| 2006 | 5,066 | 1.4% | 15,985 | 8.0% | 1,383 | 1.0% |
| 2007 | 68,497 | 26.4% | 1,235 | 0.9% | 17,250 | 14.2% |
| 2008 | 19,441 | 12.7% | −25,253 | −20.9% | 8,826 | 6.4% |
| 2009[2] | 51,533 | 29.3% | −29,630 | −21.3% | 33,317 | 36.5% |
| 2010 | 14,450 | 6.7% | −23,787 | −14.8% | −3,253 | −2.3% |
| 2011 | 6,997 | 2.5% | −64,140 | −34.3% | 69,432 | 51.5% |
| 2012 | 36,934 | 18.0% | −29,193 | −19.5% | 20,668 | 18.2% |
| 2013 | −101,009 | −35.5% | −104,386 | −47.4% | −64,402 | −36.2% |
| Cum. | −14,230 | −0.4% | −701,335 | −29.5% | −94,815 | −4.8% |
| | -9,582 | -0.3% | | | | |

[1] The upper 2004 value resulted from subtracting a disputed terminal exclusion catch for the Stikine River in 2004. Catch accounting has since been defined in the Transboundary Agreement.

[2] This is the first catch year in which fisheries operated under the provisions of the 2009 PST Agreement; cumulative deviations span the entire record that is displayed.

*Table 3.6 Deviations in actual landed catch (LC), allowable landed catch determined from preseason model calibration (PreALC), and allowable landed catch determined from postseason model calibration (PostALC) for AABM fisheries 1999–2013. Postseason values for each year are from the first postseason calibration following the fishing year. The difference between LC and PreALC represents the consequences of the management system employed in the year. The difference in PreALC and PostALC represents consequences of the forecast procedures and data used in forecasting the PreALC by the PSC Chinook Model. The difference in LC and PostALC captures the effects of both processes.*

| Year | SEAK | | | NBC | | | WCVI | | |
|---|---|---|---|---|---|---|---|---|---|
| | LC–PreALC | PreALC–PostALC | LC–PostALC | LC–PreALC | PreALC–PostALC | LC–PostALC | LC–PreALC | PreALC–PostALC | LC–PostALC |
| 1999 | 6,042 | 8,600 | 14,642 | –58,874 | 19,500 | –39,374 | –91,887 | 21,300 | –70,587 |
| 2000 | –3,407 | 11,400 | 7,993 | –98,100 | 6,500 | –91,600 | –14,062 | 29,300 | 15,238 |
| 2001 | –2,981 | –60,400 | –63,381 | –89,100 | –26,300 | –115,400 | –23,530 | –4,300 | –27,830 |
| 2002 | 633 | –15,400 | –14,767 | –42,563 | –45,100 | –87,663 | –38,164 | 6,400 | –31,764 |
| 2003 | 13,419 | –73,500 | –60,081 | –5,443 | –80,100 | –85,543 | –5,979 | –87,100 | –93,079 |
| 2004 | 33,519<br>38,166 | –34,800<br>–34,800 | –1,281[1]<br>3,366 | –2,092 | –23,400 | –25,492 | 24,124 | –17,100 | 7,024 |
| 2005 | –28,263 | 29,000 | 737 | –2,994 | 5,900 | 2,906 | 14,462 | 8,500 | 22,962 |
| 2006 | 12,766 | –7,700 | 5,066 | –7,215 | 23,200 | 15,985 | –13,517 | 14,900 | 1,383 |
| 2007 | –1,703 | 70,200 | 68,497 | –33,765 | 35,000 | 1,235 | –4,150 | 21,400 | 17,250 |
| 2008[2] | 2,341 | 17,100 | 19,441 | –29,153 | 3,900 | –25,253 | –16,874 | 25,700 | 8,826 |
| 2009 | 8,733 | 42,800 | 51,533 | –33,530 | 3,900 | –29,630 | 16,817 | 16,500 | 33,317 |
| 2010 | 8,450 | 6,000 | 14,450 | –15,487 | –8,300 | –23,787 | –4,653 | 1,400 | –3,253 |
| 2011 | –4,503 | 11,500 | 6,997 | –59,740 | –4,400 | –64,140 | 7,432 | 62,000 | 69,432 |
| 2012 | –24,766 | 61,700 | 36,934 | –53,293 | 24,100 | –29,193 | 1,168 | 19,500 | 20,668 |
| 2013 | 7,891 | –108,900 | –101,009 | –27,086 | –77,300 | –104,386 | –1,702 | –62,700 | –64,402 |

[1] The upper 2004 value resulted from subtracting a disputed terminal exclusion catch for the Stikine River in 2004. Catch accounting has since been defined in the Transboundary Agreement.

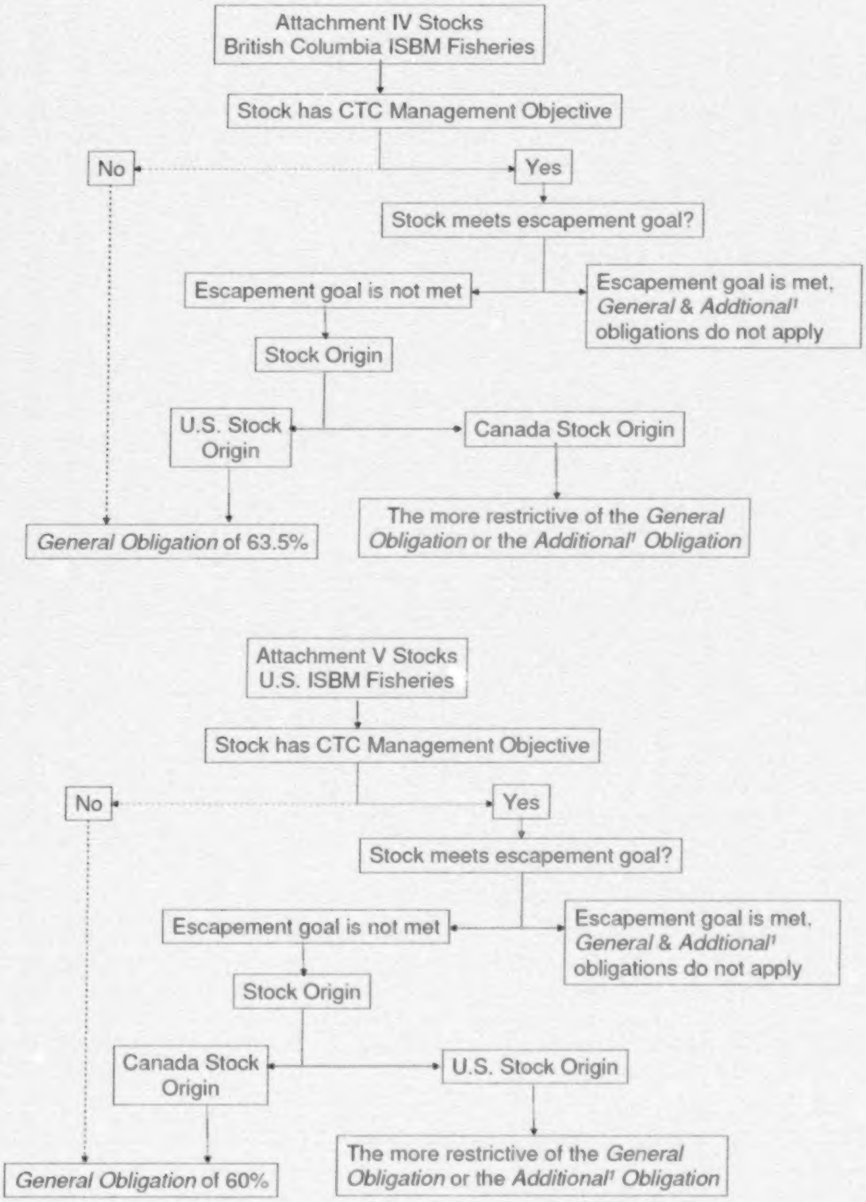
[2] This is the first catch year in which fisheries operated under the provisions of the 2009 PST Agreement.

## 3.2.3 ISBM Fishery Calibration Results

### 3.2.3.1 ISBM Indices by Stock

For ISBM fisheries, the 2009 PST Agreement specifies that Canada and the US will reduce base period exploitation rates on specified stocks by 36.5% (Canada) and 40% (US), equivalent to ISBM indices of 63.5% (Canada) and 60% (US). This requirement is referred to as the *general obligation* and does not apply to stocks that achieve their CTC-agreed escapement goal. The Treaty also specifies that for those stocks in which the general obligation is insufficient to meet the escapement goal, the Party in whose waters the stock originates shall further constrain its fisheries to an extent that is not greater than the average ISBM exploitation rate which occurred in the years 1991 to 1996. This requirement is referred to as the *additional obligation*. Figure 3.10 shows how the lesser of the of the two rates (general obligation or additional obligation), would be used as reference to evaluate performance of ISBM fisheries for the Party in which a stock with an accepted escapement goal originates, whereas the general obligation

**would be used as only reference for stocks not meeting their accepted escapement goals or not having escapement goals.**


Attachment IV Stocks
British Columbia ISBM Fisheries
Stock has CTC Management Objective
No
Yes
Stock meets escapement goal?
Escapement goal is not met
Escapement goal is met, *General* & *Addtional*[1] obligations do not apply
Stock Origin
U.S. Stock Origin
Canada Stock Origin
*General Obligation* of 63.5%
The more restrictive of the *General Obligation* or the *Additional*[1] *Obligation*
Attachment V Stocks
U.S. ISBM Fisheries
Stock has CTC Management Objective
No
Yes
Stock meets escapement goal?
Escapement goal is not met
Escapement goal is met, *General* & *Addtional*[1] obligations do not apply
Stock Origin
Canada Stock Origin
U.S. Stock Origin
*General Obligation* of 60%
The more restrictive of the *General Obligation* or the *Additional*[1] *Obligation*

[1] The additional obligation is the average ISBM exploitation rate during 1991-1996

*Figure 3.10 Flow diagrams depicting the sequence of decisions leading to the implementation of ISBM general and additional obligations for stocks in Attachments IV and V of Chapter 3 of the 2009 Agreement according to Paragraph 8 of the Chinook Chapter.*

Estimated ISBM fishery indices are shown in Table 3.7 for Canadian fisheries and Table 3.8 for US fisheries. Both tables present CWT-based indices for 2012, and PSC Chinook Model-based predicted indices for 2014. The 2009 Agreement specifies that the indices for postseason assessment be assessed using the CWT-based estimates; 2012 is the most recent analysis available for all stocks. CWT-based indices for 1999–2012 and model-based indices for 1999–2014 are presented in Appendix B of this report.

*Table 3.7 ISBM indices based on 2012 and 2014 PSC Chinook Model, 2012 CWT analysis and the 2014 indices predicted from the 2014 PSC Chinook Model for the stock groups applicable to all BC ISBM fisheries as listed in Attachment IV of the Treaty.*

| Stock Group | Escapement Indicator Stock | 2012 Model Indices for 2012 | 2014 Model Indices for 2012 | CWT Indices for 2012 | 2014 Model Indices for 2014 |
|---|---|---|---|---|---|
| Lower Strait of Georgia | Cowichan [1] | 0.443 | 0.379 [2] | 0.262 [3] | 0.307 [2] |
| | Nanaimo [4] | NA | | NA [1,5] | |
| Fraser Late | Harrison River [1] | 0.256 | 0.239 | 0.141 [6] | 0.252 |
| North Puget Sound Natural Springs | Nooksack | 0.339 | 0.214 | 0.137 | 0.197 |
| | Skagit | 0.340 | 0.214 | NA | 0.197 |
| Upper Strait of Georgia | Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish | 0.596 | 0.126 | 0.175 | 0.598 |
| Fraser Early (spring and summers) | Upper Fraser, Mid Fraser, Thompson | 0.226 | 0.095 | NA | 0.213 |
| West Coast Vancouver Island Falls | WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble) | 0.636 | 0.706 | 1.017 | 0.639 |
| Puget Sound Natural Summer/Falls | Skagit | 1.421 | 0.172 | NA | 0.368 |
| | Stillaguamish | 1.329 | 0.293 | 0.158 | 0.462 |
| | Snohomish | 1.359 | 0.171 | NA | 0.367 |
| | Lake Washington | 0.991 | 0.246 | NA | 0.337 |
| | Green River | 1.000 | 0.246 | 0.346 | 0.337 |
| North/Central BC | Yakoun, Nass, Skeena, Area 8 | 0.536 | 0.131 | NA | 0.502 |

[1] Stock or stock group with a CTC-agreed escapement goal.

[2] Although model-based indices were previously calculated separately for Cowichan and Nanaimo, these did not adequately represent impacts on either LGS stock because the model-based data represent an aggregate of the two stocks and methods do not currently exist to correctly disaggregate these data for calculation of the ISBM values. Until such methods are developed, a single index value only will be reported representing the aggregate.

[3] An inconsistency was discovered between the approaches used to calculate the model-based and CWT-based indices. The former included harvest rates for terminal sport while the latter did not. Terminal sport harvest rates are now included in the calculation of both indices. Further review is yet required to determine whether the base period terminal sport harvest rates obtained from analyses of Big Qualicum CWT recoveries adequately represent impacts that would have occurred on Cowichan Chinook.

[4] Several problems have been identified in the approach previously used to calculate the CWT-based indices for Nanaimo Chinook. Until these problems are resolved, indices for this stock will not be reported.

[5] Not available because of insufficient data (lack of stock-specific tag codes, base period CWT recoveries, etc.).

[6] The terminal sport harvest rates for Chilliwack Hatchery Chinook, the indicator stock, were removed from the calculation for the Harrison River naturals because sport harvest has been essentially zero on the natural population.

*Table 3.8 ISBM indices based on 2012 and 2014 PSC Chinook Model, 2012 CWT analysis and the 2014 indices predicted from the 2014 PSC Chinook Model for the stock groups applicable to all southern US fisheries as listed in Attachment V of the Treaty.*

| Stock Group | Escapement Indicator Stock | 2012 Model Indices for 2012 | 2014 Model Indices for 2012 | CWT Indices for 2012 | 2014 Model Indices for 2014 |
|---|---|---|---|---|---|
| Washington Coastal Fall Naturals | Hoko | 0.378 | 0.520 | NA[1] | 0.395 |
| | Grays Harbor | 0.604 | 0.494 | 0.591 | 0.477 |
| | Queets[2] | 0.179 | 0.954 | 0.951 | 0.227 |
| | Hoh[2] | 0.443 | 1.230 | 1.593 | 1.251 |
| | Quillayute[2] | 1.151 | 1.700 | 2.140 | 1.149 |
| Columbia River Falls | Upriver Brights[2] | 0.894 | 1.022 | 3.133 | 0.914 |
| | Deschutes[2] | 0.684 | 0.680 | 1.045 | 0.696 |
| | Lewis[2] | 0.442 | 0.816 | 0.895 | 0.527 |
| Puget Sound Natural Summer/Falls | Skagit | 0.327 | NC[3] | NA | 0.718 |
| | Stillaguamish | 1.054 | NC | 0.213 | 0.131 |
| | Snohomish | 0.332 | NC | NA | 0.192 |
| | Lake Washington | 0.590 | NC | NA | 0.466 |
| | Green River | 0.631 | NC | 0.544 | 0.251 |
| Fraser Late | Harrison River[2] | 0.448 | 0.671 | 0.405 | 0.528 |
| Columbia River Summers | Mid-Columbia Summers[2] | 1.369 | 1.551 | 5.192 | 1.463 |
| Far North Migrating OR Coastal Falls | Nehalem[2] | 1.696 | 1.457 | 2.267 | 1.436 |
| | Siletz[2] | 0.814 | 0.669 | 0.997 | 0.717 |
| | Siuslaw[2] | 1.646 | 1.294 | 1.603 | 1.393 |
| North Puget Sound Natural Springs | Nooksack | 0.171 | NC | 2.758 | 0.274 |
| | Skagit | 0.147 | NC | NA | 0.357 |

[1] Not available because of insufficient data (lack of stock-specific tag codes, base period CWT recoveries, etc.).

[2] Stock with a CTC-agreed escapement goal.

[3] Not able to calculate (NC). Computation of ISBM Indices for Puget Sound stocks depends on output from FRAM, which produces only one-year projections and does not run retrospectively.

## 3.2.4 CWT-based Indices in 2012

Figure 3.11 and Figure 3.12 show the historical ISBM indices based on CWT recoveries from 1999 to 2012. The ISBM fishery restrictions do not apply to stocks meeting their escapement goal. However, should the escapement goal not be met, then the general obligation or the additional obligation (see Figure 3.10) applies.

Six of the seven Canadian ISBM indices that could be calculated for 2012 from the CWT data were reduced more than required under the 2009 PST Agreement. The WCVI stock group was the only case where the CWT-based ISBM index (1.017) exceeded the general-obligation rate of 0.635. Since there is no CTC-accepted escapement goal for this stock aggregate, the general obligation applies (Table 3.9). We identified several inconsistencies in the way these indices had been computed in the past, as noted above (Table 3.7, footnotes 2–4). Most inconsistencies were between model and CWT-based methods of calculating ISBM indices. In the case of Lower Georgia Strait, Nanaimo was dropped from the CWT-based index because of concern about the method of estimating the terminal fishery rates. Nanaimo and Cowichan stocks are no longer reported separately in the model-based index because a way to split the two stocks in the base period has not yet been developed.

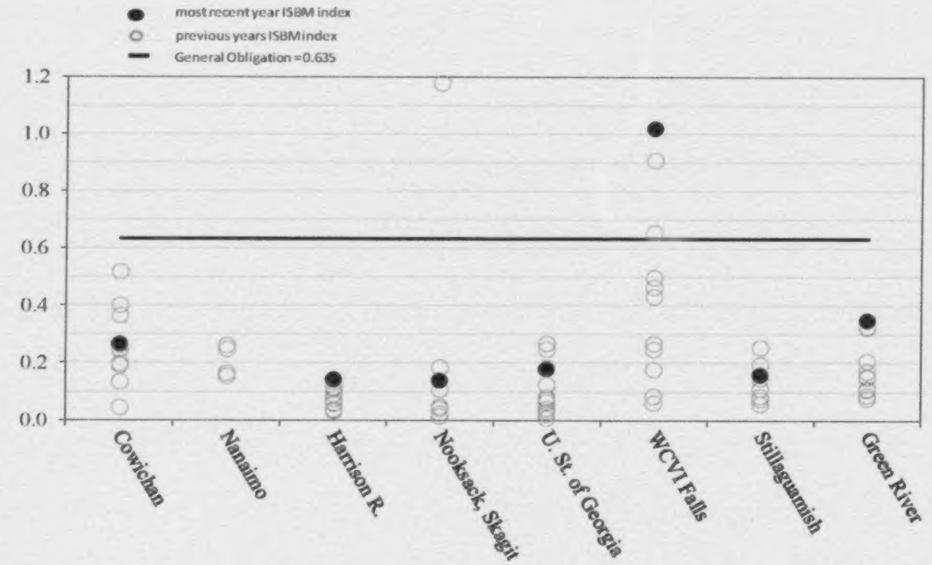


*Figure 3.11 CWT-based ISBM indices for BC fisheries for 1999–2012. Note that the ISBM Index for Nanaimo has not been computed since 2003.*

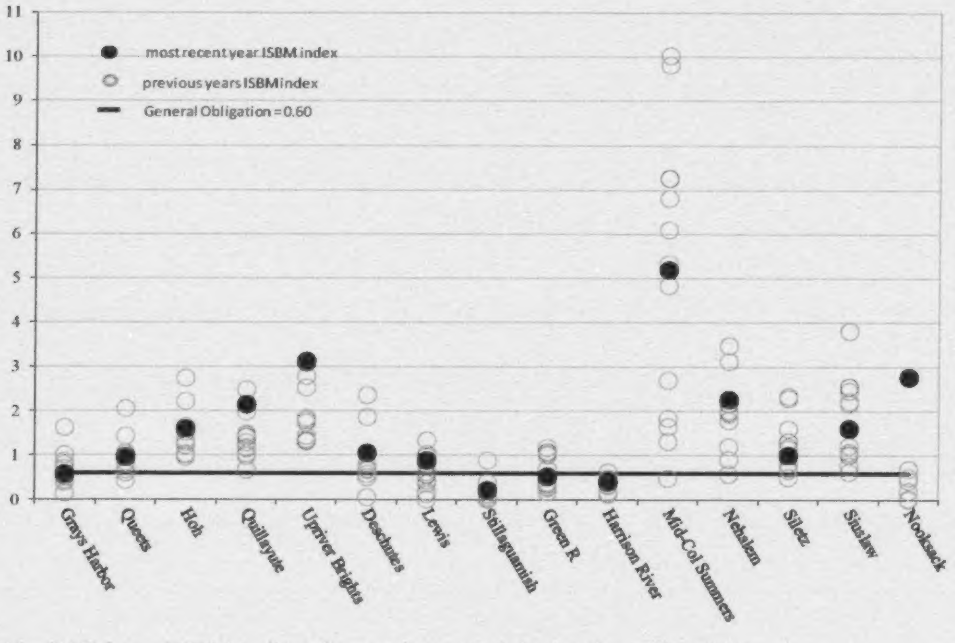


*Figure 3.12 CWT-based ISBM indices for southern US fisheries for 1999–2012.*

*Table 3.9 Review of performance in the Canadian ISBM fisheries, 2012.*

| Stock | CTC Goal | 2012 Escapement | Goal met? | Obligation[1] | 2012 CWT Index | Compliance under Treaty[2] |
|---|---|---|---|---|---|---|
| Cowichan | 6,500 | 2,668 | N | 0.621 | 0.262 | Yes |
| Nanaimo | ND[3] | ND | ND | 0.635 | NA[4] | NA |
| Harrison | 75,100 | 44,467 | N | 0.250 | 0.141 | Yes |
| Nooksack | ND | ND | ND | 0.635 | 0.137 | Yes |
| Skagit | ND | ND | ND | 0.635 | NA | NA |
| Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish | ND | ND | ND | 0.635 | 0.175 | Yes |
| Upper Fraser, Mid Fraser, Thompson | ND | ND | ND | 0.635 | NA | NA |
| Artlish, Burman, Kauok, Tahsis, Tashish, Marble | ND | ND | ND | 0.635 | 1.017 | No |
| Skagit | ND | ND | ND | 0.635 | NA | NA |
| Stillaguamish | ND | ND | ND | 0.635 | 0.158 | Yes |
| Snohomish | ND | ND | ND | 0.635 | NA | NA |
| Lake Washington | ND | ND | ND | 0.635 | NA | NA |
| Green | ND | ND | ND | 0.635 | 0.346 | Yes |
| Yakoun, Nass, Skeena, Area 8 | ND | ND | ND | 0.635 | NA | NA |

[1] General obligation (0.635) or additional obligation (1991-1996 ISBM rate average for the Party in whose waters the stock not meeting escapement goal originates), whichever is lower, for stocks listed in Annex 4, Chapter 3, Attachment IV.

[2] Annex 4, Chapter 3, Paragraph 8.

[3] No data available.

[4] Not available.

Four of the 15 US ISBM indices that could be calculated from CWT data for 2012 were reduced more than required under the obligations specified in Paragraph 8 of Chapter 3 (Figure 3.12, Table 3.10). Twelve of the 15 stocks, including the Canadian Fraser Late stock, have CTC-accepted escapement goals. All US stocks met or exceeded their respective escapement goals, and thus are in compliance under the Treaty. Only the Nooksack spring ISBM index exceeded the general obligation (0.600). Since there is no CTC-agreed escapement goal for this stock aggregate, the general obligation applies.

A considerable proportion of the recoveries in the US fisheries for Puget Sound stocks and Fraser Late, which is the only Canadian stock included in Attachment V in the Treaty corresponding to US ISBM fisheries, have occurred in mark-selective fisheries in which only clipped hatchery-origin fish are retained. Hence, CWT-based ISBM indices for these stocks should be viewed as maximum estimates because unmarked (wild) fish cannot be legally retained.

### 3.2.5 Predicted ISBM Indices for 2014

Of the 13 model-based ISBM indices calculated for stocks in Canadian fisheries, only the index for WCVI was predicted to marginally exceed the general obligation of 0.635 for Canadian ISBM fisheries in 2014 based on output from calibration 1402 (Table 3.7)). Since there is no CTC-accepted escapement goal for this stock aggregate, the general obligation would apply. The stocks with accepted escapement goals, Cowichan and Harrison, are expected to meet the obligations specified in Paragraph 8 of Chapter 3.

Nine of the 20 model-based ISBM indices for US are predicted to be above the general obligation of 0.600 or the additional obligation for US ISBM fisheries in 2014 based on calibration 1402 (Table 3.8)). All of the corresponding US stocks are expected to meet their CTC-agreed escapement goals.

*Table 3.10 Review of performance in the US ISBM fisheries, 2012.*

| Stock | CTC Goal | 2012 Escapement | Goal met? | Obligation[1] | 2012 CWT Index | Compliance under Treaty[2] |
|---|---|---|---|---|---|---|
| Hoko | ND[3] | ND | ND | 0.600 | NA[4] | NA |
| Grays Harbor | ND[5] | 14,034 | | 0.600 | 0.591 | Yes |
| Queets | 2,500 | 3,707 | Y | 0.600 | 0.951 | Yes |
| Hoh | 1,200 | 1,937 | Y | 0.600 | 1.593 | Yes |
| Quillayute | 3,000 | 3,181 | Y | 0.600 | 2.140 | Yes |
| Brights | 40,000 | 131,362 | Y | 0.600 | 3.133 | Yes |
| Deschutes | 4,532 | 17,624 | Y | 0.431 | 1.045 | Yes |
| Lewis | 5,700 | 8,143 | Y | 0.588 | 0.895 | Yes |
| Skagit | ND | ND | ND | 0.600 | NA | NA |
| Stillaguamish | ND | ND | ND | 0.600 | 0.213 | Yes |
| Snohomish | ND | ND | ND | 0.600 | NA | NA |
| Lake Washington | ND | ND | ND | 0.600 | NA | NA |
| Green | ND | ND | ND | 0.600 | 0.544 | Yes |
| Harrison | 75,100 | 44,467 | N | 0.600 | 0.405 | Yes |
| Col. R. Summers | 12,143 | 52,184 | Y | 0.600 | 5.192 | Yes |
| Nehalem | 6,989 | 7,515 | Y | 0.600 | 2.267 | Yes |
| Siletz | 2,944 | 4,871 | Y | 0.600 | 0.997 | Yes |
| Siuslaw | 12,925 | 20,018 | Y | 0.600 | 1.603 | Yes |
| Nooksack | ND | ND | ND | 0.600 | 2.758 | No |
| Skagit | ND | ND | ND | 0.600 | NA | NA |

[1] General obligation (0.600) or additional obligation (1991-1996 ISBM rate average for the Party in whose waters the stock not meeting escapement goal originates), whichever is lower, for stocks listed in Annex 4, Chapter 3, Attachment V.

[2] Annex 4, Chapter 3, Paragraph 8.

[3] No data available.

[4] Not available.

[5] An escapement goal of 13,326 was reviewed and approved by the CTC in 2014 and thus was not in effect during 2012 fisheries.

### 3.2.6 CWT ISBM Indices for 2013

One of the limitations of the current ISBM indices relates to delayed data availability (CTC 2011). The data needed to calculate the postseason ISBM CWT-based index for several stocks caught in US ISBM fisheries are not available at the time the index must be computed for timely use. Catch estimates from some US ISBM fisheries may not be available until at least one year after the fishery has occurred, either because the catch data are unavailable or because multiple agencies have not reached timely agreement on the final catch estimates needed to generate expansion factors for CWT recoveries. For example, sport harvest estimates are based on punch cards filled in by the fishers and returned by mail once the fishing year has ended, delaying estimates by more than a year from when catch occurred. Because the sport catch estimates are needed to estimate cohort sizes, the consequence of these delays to some US fisheries is that the ISBM indices for both countries may not be computed within a timeframe for ISBM evaluations to inform fishing plans for the upcoming season. Each agency's procedures for sampling fisheries for CWTs, decoding CWTs, and data management, generally meet the timelines necessary for the CTC to develop the ISBM indices on time. However, the catch estimates that are necessary to expand the CWT sample data and some of the escapement CWT samples are less timely for some Washington and Oregon sport and net fisheries.

One of the recommendations of the CTC's ISBM workgroup was that if late CWT data reporting issues are irresolvable for some US ISBM fisheries, then estimation models should be developed and reviewed to enable the CTC to report the ISBM indices on time to use in the preseason management process for the next season (CTC 2011). Reducing the two-year time lag for CWT-based indices is highly desirable and possible for some Canadian stocks with timely available catch and CWT recovery data. The computation of CWT-based ISBM indices for year 2013 was possible for four Canadian stocks and these values are shown in Table 3.11. ISBM indices for stock groups Lower Strait of Georgia, Fraser Late, Upper Strait of Georgia, and WCVI were below the general or additional obligation. The CWT-based indices for Lower Strait of Georgia, Fraser Late, and Upper Strait of Georgia were within the range observed from 1999 to 2012, and relatively close to the period average. The 2013 CWT index value for the WCVI stock group was about half the index average for 1999–2012.

## 3.3 PARAGRAPH 13(D) AND (E) ANALYSIS

Paragraph 13 of the 2009 Agreement describes a set of rules involving interactions between data, stocks, and fisheries, which must be met in order to require automatic reductions to be taken in SEAK and NBC AABM and ISBM fisheries. This contributes to the attainment of maximum sustainable yield or other biologically based escapement objectives.

### 3.3.1 Paragraph 13(c) Analysis

The CTC provides an evaluation of the stocks listed in Attachments I–II (Table 3.12) for Paragraph 13(c), comparing agreed management objectives to observed values for 2012 and 2013. For SEAK and NBC, the stock groups in Attachment I and II are identical, and thus are combined in the AABM Fishery column. All stocks in those attachments have escapement-based management objectives. The CTC did not include an evaluation of the stock groups in Attachment III because of paragraph 13(g). Note that ISBM obligations for 2013 cannot be calculated for Oregon and Washington stocks until 2015 because of the delay in availability of required CWT data under most southern US monitoring programs.

*Table 3.11 2013 Canadian CWT-based ISBM indices for Canadian stock groups based on 2014 CWT analysis, their average CWT index values for 1999–2012, and model-based ISBM indices for 2013 and the average model values for 1999–2014. Values in parenthesis represent standard deviations.*

| | | **Canadian ISBM** | | | |
|---|---|---|---|---|---|
| **Stock Group** | **Escapement Indicator Stock** | **CWT Indices 2013** | **CWT Indices Average (1999–2012)** | **Model Indices 2013** | **Model Indices Avg (1999–2014)** |
| Lower Strait of Georgia | Cowichan | 0.193 | 0.259 (0.121) | 0.362 | 0.387 (0.130) |
| Fraser Late | Harrison River | 0.178 | 0.068 (0.034) | 0.286 | 0.289 (0.129) |
| Upper Strait of Georgia | Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish | 0.095 | 0.093 (0.085) | 0.649 | 0.448 (0.263) |
| West Coast Vancouver Island Falls | WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble) | 0.280 | 0.423 (0.253) | 0.227 | 0.540 (0.387) |

*Table 3.12 Evaluation of criteria for consideration of additional management action in regard to Paragraph 13(c) of Chapter 3 of the 2009 PST Agreement.*

| **AABM Fishery** | **Stock Group** | **Stocks** | **Stocks with agreed objective** | **No. below threshold (2012 and 2013)** | **Stocks with a 2014 forecast** | **No. of 2014 forecasts below threshold** | **Paragraph 13(c)(ii) qualified** |
|---|---|---|---|---|---|---|---|
| SEAK/ NBC | North/Central British Columbia | 3 | 0 | NA[1] | 0 | NA | No |
| | Upper Strait of Georgia | 5 | 0 | NA | 0 | NA | No |
| | West Coast Vancouver Island Falls | 7 | 0 | NA | 0 | NA | No |
| | Far North Migrating Oregon Coastal Falls | 3 | 3 | 0 | 3 | 0 | No |
| | Columbia River Falls | 3 | 3 | 0 | 2 | 0 | No |
| | Columbia River Summers | 1 | 1 | 0 | 1 | 0 | No |
| | Washington Coastal Fall Naturals | 5 | 3 | 0 | 3 | 0 | No |
| | Fraser Early (Spring and Summers) | 3 | 0 | NA | 0 | NA | No |

[1] Not available due to an insufficient number of stocks with agreed escapement objectives, or forecasts were not provided.

The management objectives for stock groups in Attachments I–II were met in 2012 and 2013. In January 2013 the CTC advised the Chinook Interface Group that annual escapement forecasts are not practical for use in implementing Paragraph 13(c) because reliable escapement forecasts are not available for 21 out of 30 stocks.

## 3.3.2 Paragraph 13(d) and (e) Evaluation

An evaluation of ISBM performance under paragraphs 13(d) and 13(e) was first undertaken by the CTC and reported in TCCHINOOK (11)–4 (CTC 2011). Paragraph 13(d) describes a situation when a stock can be identified as meeting the criteria to trigger additional management action, even if escapement exceeded the threshold, whereas Paragraph 13(e) describes a situation when a stock can be excluded from triggering additional management action, even when escapement is below the threshold (Figure 3.13). Paragraph 13(d) is evaluated only for the jurisdiction in which the stock originates. Paragraph 13(e) prevents a stock from being incorrectly identified as having not achieved its escapement-based management objective because a jurisdiction's ISBM fisheries exceeded the general obligation. The evaluation demonstrated that paragraphs 13(d) and 13(e) can be quantitatively evaluated using a common method since both require estimation of the spawning escapement that would have occurred if a jurisdiction's ISBM fishery impact was the same as the general obligation level.

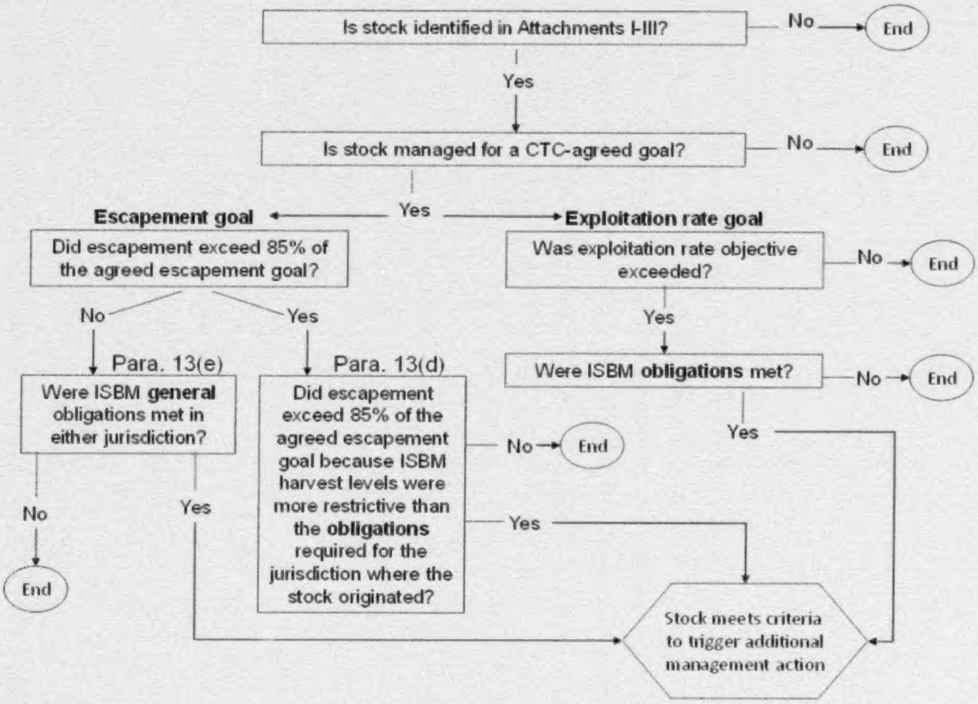

Is stock identified in Attachments I-III?
No
End
Yes
Is stock managed for a CTC-agreed goal?
No
End
Yes
Escapement goal
Exploitation rate goal
Did escapement exceed 85% of the agreed escapement goal?
Was exploitation rate objective exceeded?
No
End
No
Yes
Yes
Para. 13(e)
Para. 13(d)
Were ISBM general obligations met in either jurisdiction?
Did escapement exceed 85% of the agreed escapement goal because ISBM harvest levels were more restrictive than the obligations required for the jurisdiction where the stock originated?
Were ISBM obligations met?
No
End
No
End
Yes
No
Yes
End
Yes
Stock meets criteria to trigger additional management action

*Figure 3.13 Diagram outlining the steps involved in a single-year evaluation of Paragraph 13(d) and 13(e) provisions in the 2009 Agreement pertaining to criteria for adjustment of ISBM fisheries.*

Accordingly, during 2012 the CTC developed a computer program (Paragraph13Evaluation.exe) to evaluate these provisions. The program uses CWT-based AEQ total mortality, external terminal harvest rates, CTC-agreed escapement goals, and age-specific escapement if available (if not, it derives average age-specific escapement from CWT recoveries). After computing average exploitation rates for the two base periods, 1979–1982 (i.e., general obligation, required for either jurisdiction) and 1991–1996 (i.e., additional obligation, required for the jurisdiction where the stock originated if it is more restrictive than the general obligation), the program estimates escapement that may have occurred if fishing were at the applicable obligation level. It provides detailed quantitative output for each stock and year and a summary for all stocks with CTC-agreed goals showing whether stocks were flagged under 13(d) or 13(e) and whether additional management action was needed. Equations and methods are described in detail in TCCHINOOK (11)–4 (CTC 2011). This program will enable the CTC to fulfill, if needed, Paragraph 13(f). However, the availability of the data needed for this analysis in February for the current management year remains an issue. The data needed for the program has three main limitations. First, the program can only perform postseason evaluations since it uses CWT data. Second, only six of the 12 stock groups can be evaluated on the basis of CTC-agreed escapement goals. Third, even when escapement data are available, the necessary AEQ total mortality data can be more than two years out of date, which prevents implementing Paragraph 13. For example, the evaluation for Paragraph 13(d) and (e) in this report will cover four of the eight stock groups in Attachments I–II (North Oregon Coastal Falls, Washington Coastal Fall Naturals, Columbia River Summers, and Columbia River Falls) through 2011 or 2012. Management entities have not supplied escapement goals meeting CTC- agreed data standards for the other stock groups (Upper Strait of Georgia, WCVI, NBC, and Fraser Early).

The evaluations of 13(d) and (e) are shown in Table 3.13. This evaluation found that none of the indicator stocks or stock groups met the conditions requiring additional management actions. The evaluation for all four stock groups North Oregon Coastal Falls, Columbia River Summers, Columbia River Falls, and Washington Coastal Falls showed that annual evaluations were based on 13(d) because escapements exceeded 85% of the corresponding escapement goals, except for the Nehalem in 2010 in which case the evaluation was based on 13(e). None of the stocks were flagged for two consecutive years, although the Quillayute was flagged for 2011.

### 3.3.3 Other Considerations

The 2009 Agreement directs the CTC to provide a review of Attachments I–V by 2014 or earlier, to determine if the current lists of stock groups continue to be appropriate, if there are new criteria that could be employed to revise stock group listings for each Attachment, and whether any changes to the Attachments proposed by a Party may be appropriate. This task has been deferred in the current cycle due to competing priorities, plus budget and personnel limitations.

*Table 3.13 Evaluation of paragraphs 13(d) and 13(e) provisions for stock groups and indicator stocks listed in Attachments I and II of the 2009 Agreement. The last column shows if criteria were met for additional management actions (AMA) based on the evaluation for the last two years with data.*

| Stock Group | Indicator Stock | CTC Goal | 13(d) or 13(e) | 2010 | 2011 | 2012 | AMA (last 2 years) |
|---|---|---|---|---|---|---|---|
| North Oregon Coastal Falls | | | | | | | No |
| | Nehalem | Yes | >85% Goal & 13(d) | NA | No | No | |
| | | | <85% Goal & 13(e) | No | NA | NA | |
| | Siletz | Yes | >85% Goal & 13(d) | No | No | No | |
| | | | <85% Goal & 13(e) | NA | NA | NA | |
| | Siuslaw | Yes | >85% Goal & 13(d) | No | No | No | |
| | | | <85% Goal & 13(e) | NA | NA | NA | |
| Columbia River Summers | | | | | | | No |
| | Mid-Col | Yes | >85% Goal & 13(d) | No | No | No | |
| | | | <85% Goal & 13(e) | NA | NA | NA | |
| Columbia River Falls | | | | | | | No |
| | Up River Brights | Yes | >85% Goal & 13(d | No | No | No | |
| | | | <85% Goal & 13(e) | NA | NA | NA | |
| | Deschutes | Yes | >85% Goal & 13(d | No | No | No | |
| | | | <85% Goal & 13(e) | NA | NA | NA | |
| | Lewis [1] | Yes | >85% Goal & 13(d | No | No | ND[2] | |
| | | | <85% Goal & 13(e) | NA | NA | ND | |
| Washington Coastal Falls [3,4] | | | | | | | No |
| | Hoko | No | ND | ND | ND | ND | |
| | Grays Harbor | No | ND | ND | ND | ND | |
| | Queets | Yes | >85% Goal & 13(d | No | No | ND | |
| | | | <85% Goal & 13(e) | NA | NA | ND | |
| | Quillayute | Yes | >85% Goal & 13(d | No | Yes | ND | |
| | | | <85% Goal & 13(e) | NA | NA | ND | |
| | Hoh | Yes | >85% Goal & 13(d | No | No | ND | |
| | | | <85% Goal & 13(e) | NA | NA | ND | |

[1] The 2012 evaluation was not possible for Lewis due to few CWT recoveries in 2012. The previous evaluation for this stock (CTC 2011) was possible up to 2011 as for the other Columbia River Falls stocks.

[2] No data available.

[3] Washington Coastal Falls stocks usually exhibit a three-year lag in CWT data required for this evaluation.

[4] The previous evaluation for Washington Coastal Falls stocks (TCCHINOOK (14)–1) was based on escapement-by-age data as it is the case for all other stocks in this summary table. Due to de absence of escapement-by-age data, the current evaluation was based on total escapement data and the average age compositions for these stocks generated by the computer program (Paragraph13Evaluation.exe).

## 3.4 MODEL VALIDATION AND IMPROVEMENT

The changes in AIs between 2013 pre- and postseason calibrations that are noted in Section 3.2.2 are among the largest observed, equating to a reduction in approximately 100,000 allowable catch across the three AABM fisheries (Table 3.4). Model errors of this magnitude underscore the importance of routine model validation, as well as occasional targeted investigations and ongoing longer term efforts to improve the PSC Chinook Model. The reliability of model outputs, including AI predictions, is dependent on a number of factors including model parameters (e.g., base period exploitation rates); model structure (e.g., spatio-temporal fishery strata); and/or the annual CWT, catch, and run-size inputs (forecast or postseason estimates) used for calibration. Here, we report on annual comparisons of fishery indices based on model-generated data and CWT estimates and preseason (forecast) versus postseason run sizes. Lastly, we briefly review ongoing, related model improvement activities.

### 3.4.1 Evaluation of Fishery Indices

Fishery mortality indices (FIs) calculated from model-generated data for all model stocks can be compared to values generated from the estimates of catches or total mortality of CWT fish of exploitation rate indicator stocks. Model and CWT-based FIs use the same equation, latter empirical estimates are considered more accurate than the modeled estimates. Fishery indices can be constructed as a ratio of means (ROM) or as an SPFI (CTC 2009a).

The SEAK troll FI based on model data closely follows the trend of the CWT-derived estimate from 1979 through 1989 for both landed catch and total mortality (Figure 3.14 and Figure 3.15. Between 1990 and 2000, the model estimates of both the landed catch and total FIs were less than the CWT-derived estimate for most years. However, since 2001, the model estimates have typically been higher. Since 1990, the model estimates also show less variability compared to the CWT-derived indices.

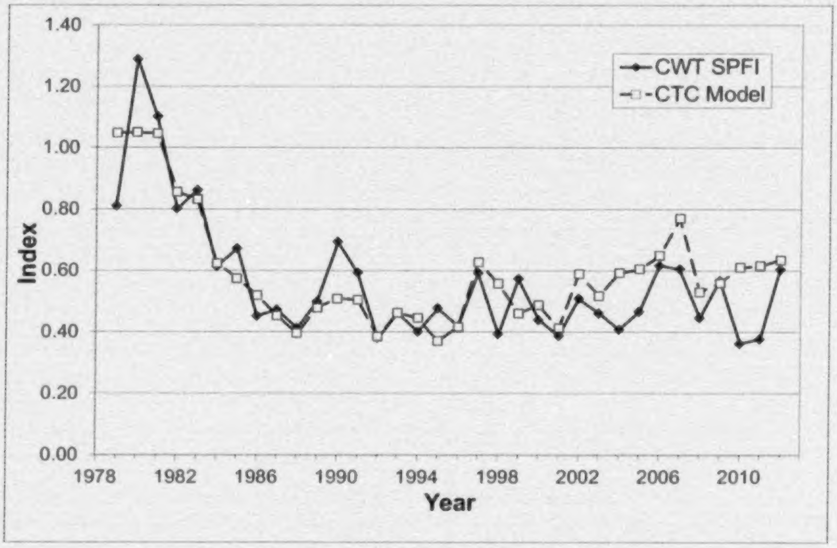


*Figure 3.14 Estimated CWT-based SPFI (through 2012) and model landed catch fishery indices (through 2012) for the SEAK troll fishery.*

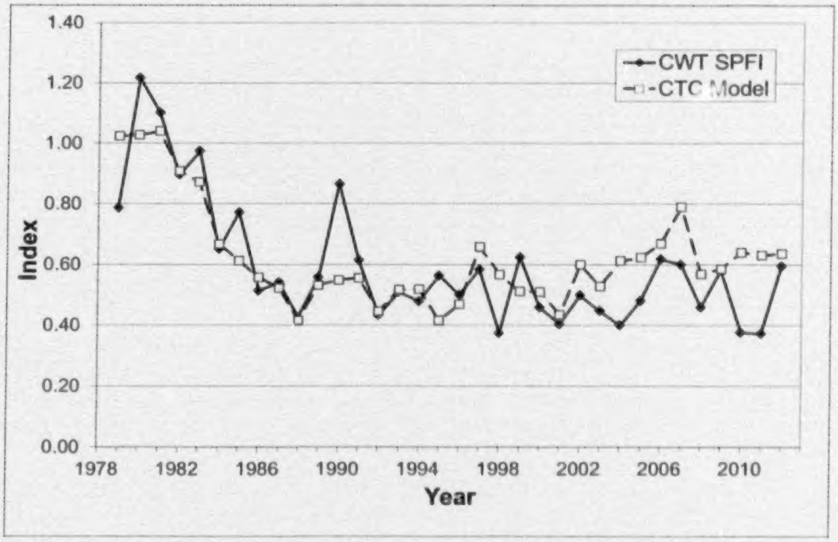


*Figure 3.15 Estimated CWT-based SPFI (through 2012) and model total mortality fishery indices (through 2012) for the SEAK troll fishery.*

### 3.4.2 Comparison of the Annual Fishery Indices for the NBC and WCVI Troll Fisheries

Based on the results that came out of the Harvest Rate Index Analysis in 2009 (CTC 2009a), in which the SPFI was found to be the most accurate and unbiased estimator in most fisheries, time, and areas, a recommendation was made to use the SPFI estimator as the FI, not only for the SEAK troll fishery but also for the other two AABM troll fisheries. As a result, the SPFI was developed for the WCVI and NBC troll fisheries. Stock- and age-specific SPFIs will not be used as input to the annual model calibration procedure for these two fisheries until the model has been calibrated with updated base period data, and assessment of the effects of using the SPFIs has been completed. However, comparisons among the SPFI, the currently implemented CWT-based ROM FI, and the model data-based FI, are provided in this section.

The model-derived fishery mortality indices for NBC troll generally follow the same trend as the CWT-derived ROM FIs (Figure 3.16 and Figure 3.17). Since 1991, however, the model-based FIs exceeded the CWT-derived estimates in all but four years for both landed catch and total mortality indices. The deviation between the two indices has been consistently greater since 2003 compared to preceding years. The SPFI has followed the same general pattern displayed by the other two FIs, but has been lower in magnitude and year-to-year fluctuations have been smaller in most years throughout the time series.

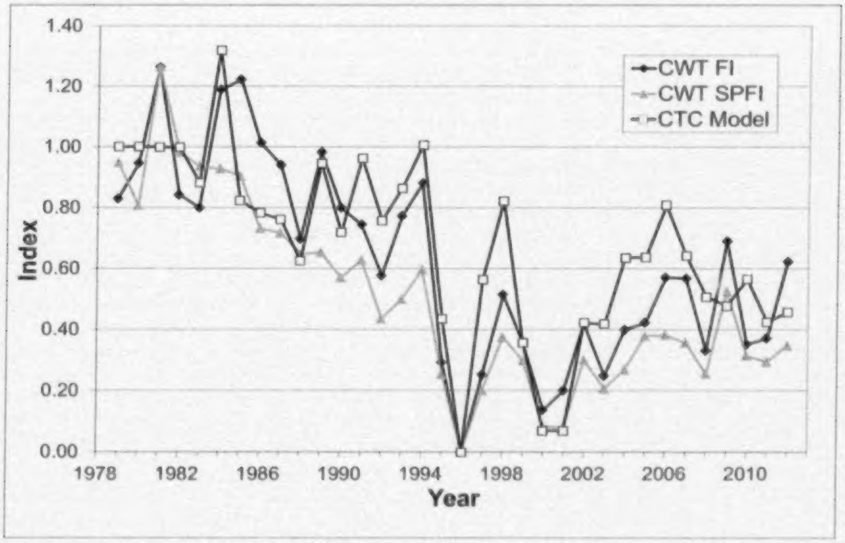


*Figure 3.16 Estimated CWT ROM (FI), SPFI (through 2012) and model landed catch fishery indices (through 2012) for the NBC troll fishery.*

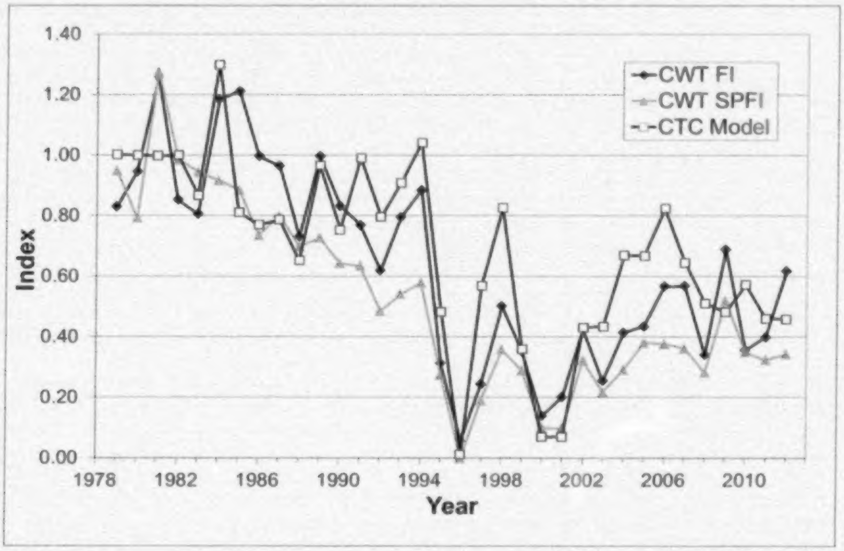


*Figure 3.17 Estimated CWT ROM (FI), SPFI (through 2012) and model total mortality fishery indices (through 2012) for the NBC troll fishery.*

For the WCVI troll fishery, correspondence between the model-derived FI and the CWT-based ROM FI, was reasonably close from the start of the time series (1979) to the mid-1990s for both landed catch (Figure 3.18) and total mortality (Figure 3.19). Starting around 2000, model data-based and CWT-based ROM FIs diverged noticeably, with the CWT FIs consistently exceeding the model-based FIs. This divergence is attributed to changes in the spatial and temporal conduct of the fishery (e.g., cession of fishing in the summer period) to reduce impacts on BC stocks of conservation concern (e.g., Fraser River early return-timing stocks). While the SPFI is considered to be a better approach to incorporating temporal and spatial changes in fishery catch patterns, between-year fluctuations have been much greater at times with the SPFI calculated for the WCVI troll fishery. Since about 2000, after the fishery management changes took place, the SPFI has tended to correspond more closely with the model data-based FI compared to the CWT-based FI (Figure 3.18 and Figure 3.19).

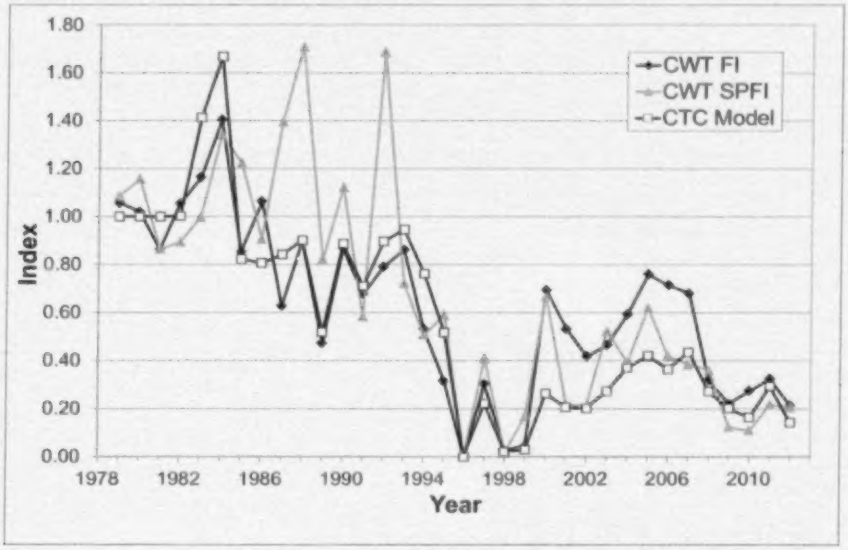


*Figure 3.18 Estimated CWT ROM (FI), SPFI (through 2012) and model landed catch fishery indices (through 2012) for the WCVI troll fishery.*

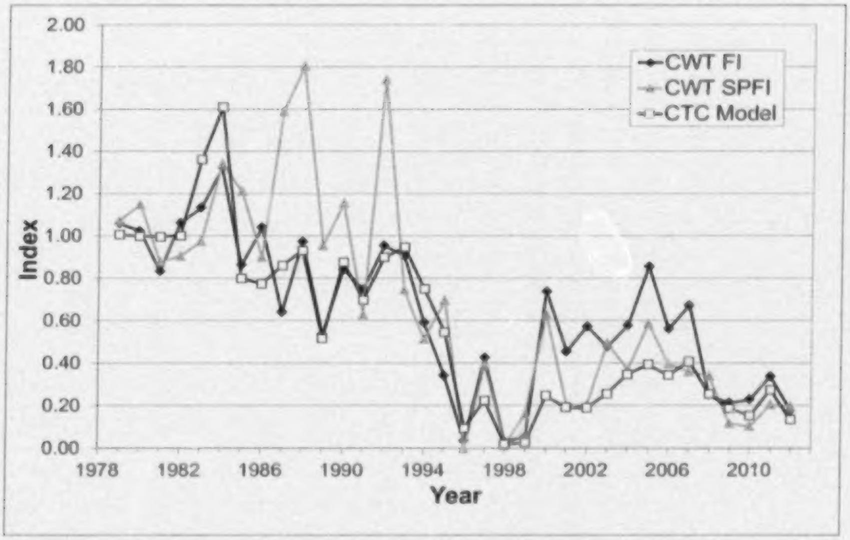


*Figure 3.19 Estimated CWT ROM (FI), SPFI (through 2012) and model total mortality fishery indices (through 2012) for the WCVI troll fishery.*

### 3.4.3 Stock Forecasts used in the PSC Coastwide Chinook Model

A summary of model-produced and agency-produced forecasts for 1999–2013 is shown in Figure 3.20 and Appendix J. The relationship between the model indicator stocks, exploitation rate indicator stocks, and PST Annex stocks is shown in Appendix A. A major factor influencing the ability of the model to predict Chinook salmon abundance in AABM fisheries is the ability of the model to predict the returns of Chinook salmon (in terms of ocean escapement or spawning escapement) in the forecast year. During model calibration, agency forecasts are input to the model for all model stocks with available forecasts. Thus, for model stocks with external forecasts, the variation between model forecasts and actual returns can be broken into two parts: the ability of the model to match the agency forecasts used as inputs to the model, and the ability of the agency forecasts to accurately predict the actual return of Chinook salmon in the upcoming year. In the Appendix J forecast tables, the column labeled *Model Fcst/Agency Fcst* shows the ratio of the model prediction and the agency forecast as a percentage. The column labeled *Agency Fcst/Postseason* shows the ratio of the agency forecast and the actual return as a percentage. The column labeled *Model Fcst/Postseason* shows the ratio of the return predicted by the model and the actual return as a percentage. A value of 100% would indicate that the predicted and actual values were the same.

Overall, the model forecasts are similar to the agency forecasts. This result is strongly influenced by the incorporation of the agency forecasts into the model calibration procedure. The average percent error of all *Model Fcst/Agency Fcst* is –1.9%. For agency forecasts versus postseason run sizes, the average percent error is –8.2%. The average percent error for model forecasts versus postseason run sizes was –9.5%.

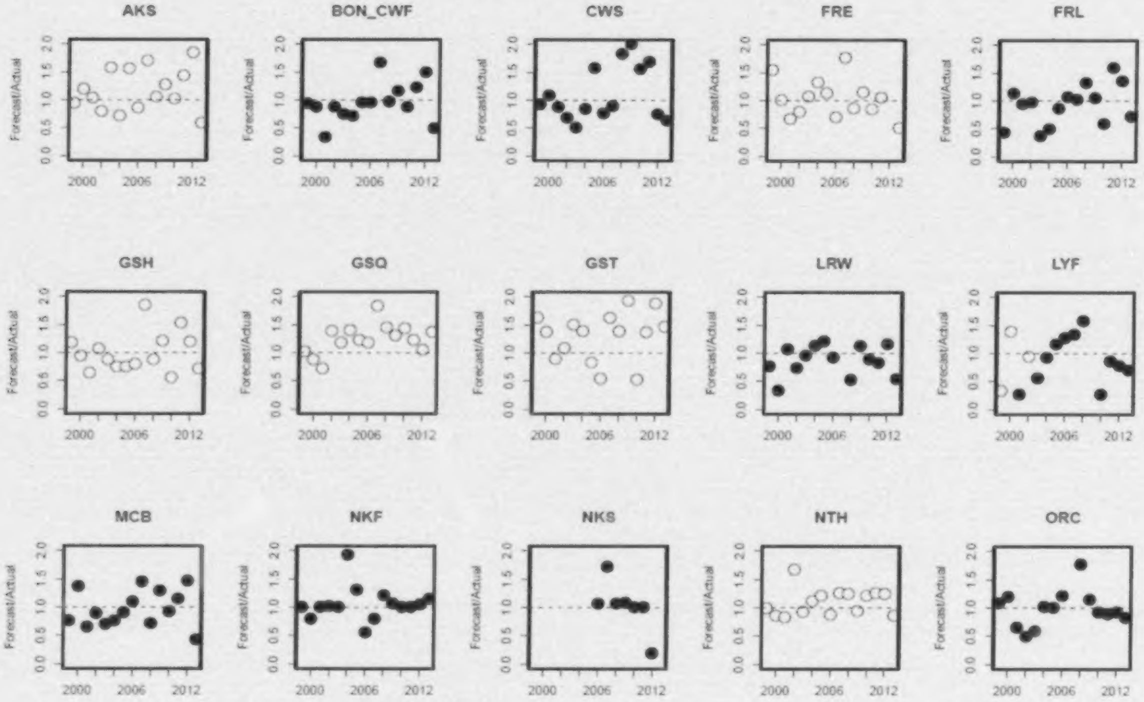


*Figure 3.20 Forecast performance (Forecast/Actual) plots for PSC Chinook Model stocks.*

*Note: Solid black circles correspond to years when calibrations were based on agency forecasts and unfilled (white) circles correspond to years when model-generated forecasts were used. Stock abbreviations follow those defined in Appendix J.*

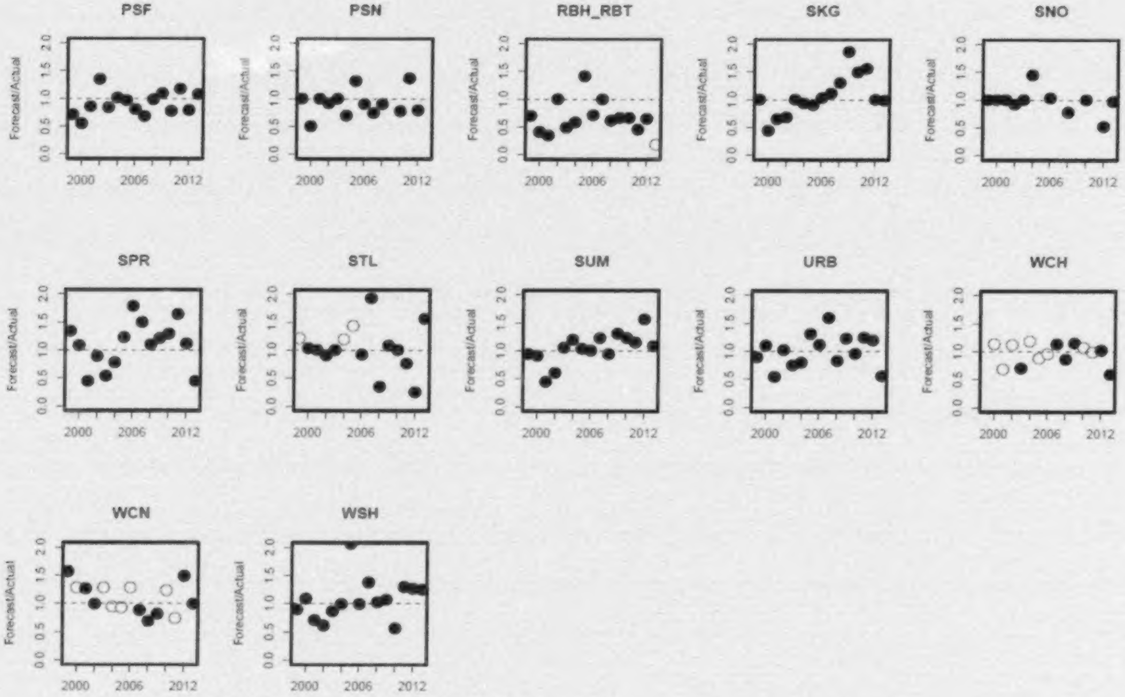


*Figure 3.20 Page 2 of 2.*

The calibration of the PSC Coastwide Chinook Model in 2014 showed that the aggregate abundance for each of the three AABM fisheries was underforecasted for 2013. The AI values all increased with the postseason assessment (Table 3.3). This result can be largely attributed to the fact that the majority of agency-provided forecasts used as input to the calibration procedure were lower than the actual return (Appendix J). The forecast by the PSC Chinook Model for those stocks without an agency forecast was also mostly lower than the actual return (Table 3.3). This pattern with the 2013 return exceeding the forecast was observed regardless of stock size (Table 3.3) although the forecast and actual return was generally closer for stocks in the Puget Sound and coastal Washington region compared to other regions (Figure 3.21).

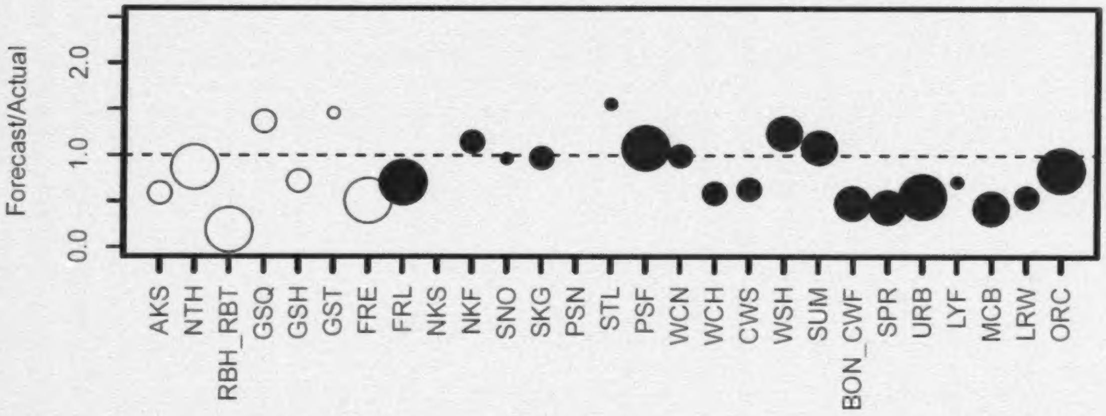


*Figure 3.21 Ratio of the 2013 forecast to the actual return for stocks represented in the PSC Chinook Model.*

*Note:* Points lying above the dashed horizontal line returned lower than forecast; points lying below the dashed horizontal line returned greater than forecast. Filled (black) circles correspond to stocks with agency-supplied forecasts; unfilled (white) circles correspond to stocks with forecasts generated by the PSC Chinook Model. The four symbol sizes correspond to categories of increasing relative stock size (based on average terminal run size: <10,000, 10,000–50,000, 50,000–100,000, and >100,000). Stocks are arranged along the x-axis from north to south, and are defined according to the codes in Appendix J.

### 3.4.4 PSC Chinook Model Improvement Activities

Information and data generated by the PSC Chinook Model are used for many purposes, including the management of AABM and ISBM fisheries and the estimation of fishing impacts for model stocks. Improvements to the model are one of the high priorities identified in the 2009 Agreement. The 2009 Agreement included substantial, dedicated resources ($1 million US) to address various issues. Knowledge about the model's performance can help direct model improvement resources to where they are needed and beneficial. During 2014, the CTC engaged in the following model improvement activities, which are still ongoing:

1. Data Generation Model: The CTC's stock and fishery assessment methods are largely derived from CWT data. With data collected from the field, it is not feasible to determine the accuracy of statistical estimates derived from the application of methods and algorithms

employed by the CTC. A data generation model is being developed to evaluate the performance of CWT methods in situations where CWT recoveries and incidental mortalities are known with certainty. The data generation Model will generate the necessary information to allow for experiments that will provide thorough and systematic evaluations of metrics of interest, including alternative ISBM metrics that were identified for further evaluation in CTC (2011).

2. Chinook Interface System: The CTC is continuing to update and improve the stock and fishery stratifications in the Cohort Analysis System as well as the next generation combined Cohort Analysis System and PSC Chinook Model, known as the Chinook Interface System.
3. SharePoint: The CTC supported the development of a SharePoint site with capabilities to improve the efficiency of CTC analyses and report generation. This SharePoint site construction is now complete. CTC contributor and owner training sessions with Softlanding (the SharePoint developer) were conducted in June and July of 2014. The site now allows the CTC to store information, reports, and analyses. It also allows for collaboration and the transfer of information to aid in the preparation and dissemination of the annual CTC reports and assignments.
4. Stock Forecasting Tool: Phase one of development of the stock forecasting tool (ForecastR) was completed and presented to the CTC. Phase two of development is currently underway and scheduled for completion in January of 2015. ForecastR will improve the CTC's ability to generate stock-specific forecasts for use in the PSC Chinook Model and for other purposes as well.
5. The CTC model improvement funds funded work by DFO to recover historical WCVI sport CWT information from paper records and convert it to a digital format from which data can be extracted.
6. Base-period recalibration work for the PSC Chinook Model has been ongoing during 2014. The work is proceeding in two phases. The initial phase designed to incorporate a more detailed stock stratification in the model is nearly complete. The second phase will incorporate more detailed fishery stratification in the model. These modifications will allow for better representation of stocks—and the fishery impacts on the stocks—in AABM and ISBM fisheries. It will also allow for an estimation of the US fishery impacts north and south of Cape Falcon.

The results of these model improvement initiatives will continue to be documented in CTC technical notes, annual reports and special reports to the Commission.

# 4 CWT ANALYSIS AND MARK-SELECTIVE FISHERIES

Chinook salmon released from Puget Sound hatcheries and spring-run hatchery Chinook salmon in the Columbia River have been mass marked (MM) since BY 1998. Mass marking of Columbia River fall Chinook salmon started with BY 2005, and for BY 2009 onwards most of the Chinook salmon production intended for harvest released in Washington and Oregon has been mass marked (SFEC 2009). Mark-selective fisheries (MSFs) have been in place in Puget Sound (including US Strait of Juan de Fuca) since 2003, on the Columbia River since 2001, in some terminal fishing areas along the Oregon and Washington coast since 2008, and in BC Strait of Juan de Fuca since 2008 (Table 4.1). Additionally, the first ocean mark-selective Chinook salmon fishery occurred off the Washington Coast (Areas 1–4) in 2010. No new MSFs were introduced during fishing year 2012, the most recent year considered in this section.

## 4.1 CATCH IN MSFs

Regulations for MSFs allow for the retention of salmon missing an adipose fin (i.e., fish that are marked) and require the release of fish with an intact adipose fin (i.e., fish that are unmarked). As a consequence, exploitation rates from MSFs are different between marked Chinook salmon and those without a mark. CWT analysis that is based on recoveries of marked and tagged Chinook salmon will only reflect the exploitation on the marked component of the release group. The unmarked counterpart will not be retained, hence not recovered, during CWT sampling of the MSF. The exploitation rate of the unmarked component is a function of the release mortality rate and the occurrence of multiple encounter events. The magnitude of the differential exploitation between the marked and unmarked components depends on the proportion of the encounters of the stock in MSFs compared to nonselective fisheries. As the proportion in MSFs increases, CWT analysis of marked Chinook salmon recoveries will likely overestimate the exploitation rate on the unmarked group. Similarly, the assumption that marked and tagged hatchery fish can properly represent the exploitation rate on associated natural stocks weakens with exposure to MSFs. An index of the relative difference in exploitation rate between marked and unmarked CWT groups can be assessed from the escapements of double index tag (DIT) groups.

The benefits of MSF regulations to reduce impacts on natural stocks as a conservation measure depend on the relative abundance of marked (though not necessarily tagged) fish available to the fishery. Large scale mass marking of Chinook salmon began with the 1998 brood on Puget Sound fall-run and on Columbia River spring-run Chinook salmon. Mass marking of Columbia River fall Chinook salmon started with BY 2005 and for BY 2009 onwards most of the Chinook salmon production intended for harvest released in Washington and Oregon has been mass marked (SFEC 2009). Chinook salmon have not been mass marked in Canada or Alaska.

*Table 4.1* ***Estimated landed catch of tagged and marked PSC Chinook Indicator Stocks in BC, Washington, and Oregon, in all net, troll, and sport fisheries for catch years 2003–2012 and percent of the total tagged and marked catch landed in MSFs.***

| REGION | STOCK | 2003 | | 2004 | | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | | 2010 | | 2011 | | 2012 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BRITISH COLUMBIA | Atnarko Spring | | | | | | | | | | | | | | | 1 | | 43 | | 410 | |
| | Atnarko Summer | 149 | | 163 | | 315 | | 298 | | 91 | | 2 | | 330 | | 238 | | 326 | | 309 | |
| | Big Qualicum | 88 | | 114 | | 220 | | 145 | | 212 | | 146 | 10% | 162 | 2% | 155 | | 130 | | 224 | 2% |
| | Chilliwack (Harrison Fall Stock) | 1,258 | 2% | 1,426 | 1% | 1,203 | 1% | 594 | 1% | 379 | 2% | 1,036 | 4% | 695 | 5% | 1,465 | 6% | 999 | 8% | 1,253 | 10% |
| | Cowichan Fall | 218 | 1% | 276 | 1% | 184 | 2% | 174 | | 49 | | 140 | | 280 | | 486 | 3% | 766 | 7% | 1,563 | 5% |
| | Dome Creek Spring | 126 | | 1 | | 161 | | 14 | | 6 | | | | | | | | | | | |
| | Nanaimo River Fall | 260 | 3% | 253 | | 141 | 3% | 49 | | 441 | 1% | 44 | | 6 | | | | | | | |
| | Nicola River Spring | 240 | | 139 | | 101 | | 69 | | 43 | | 68 | | 88 | 4% | 196 | 4% | 97 | | 217 | |
| | Puntledge Summer | 21 | | 26 | | 78 | | 44 | | 58 | | 51 | | 116 | | 124 | | 99 | | 64 | |
| | Quinsam Fall | 205 | | 311 | | 372 | | 284 | | 266 | | 102 | | 140 | | 202 | | 309 | | 266 | |
| | Robertson Creek | 1,173 | | 2,532 | | 2,301 | | 1,751 | | 1,628 | | 831 | | 807 | | 341 | | 1,523 | | 1,118 | |
| | Lower Shuswap River Summers | 639 | | 611 | | 460 | | 721 | | 128 | | 571 | | 724 | 0% | 857 | | 744 | 1% | 702 | 1% |
| | Chehalis (Harrison Fall Stock) | 140 | 3% | 295 | 3% | 262 | | 226 | | 77 | 2% | 509 | 2% | 268 | 7% | 455 | 7% | 591 | 6% | 320 | 9% |
| | Kitsumkalum Summer | 182 | | 241 | | 109 | | 108 | | 145 | | 243 | | 168 | | 241 | | 186 | | 74 | |
| BRITISH COLUMBIA Total | | 4,698 | 1% | 6,387 | 0% | 5,908 | 0% | 4,479 | 0% | 3,522 | 0% | 3,743 | 2% | 3,783 | 2% | 4,760 | 3% | 5,811 | 3% | 6,520 | 4% |
| NORTH PUGET SOUND | Nooksack Spring Fingerling | 215 | | 454 | | 371 | 2% | 326 | 2% | 288 | 2% | 622 | 6% | 306 | 6% | 410 | 5% | 213 | 4% | 249 | 9% |
| | Samish Fall Fingerling | 522 | 0% | 354 | 1% | 525 | 4% | 1,300 | 2% | 1,404 | 3% | 1,240 | 10% | 881 | 11% | 1,189 | 9% | 818 | 4% | 1,421 | 6% |
| | Skagit Spring Fingerling | 220 | 1% | 349 | 1% | 400 | 11% | 728 | 48% | 1,221 | 41% | 698 | 32% | 457 | 34% | 615 | 23% | 562 | 30% | 805 | 28% |
| | Skagit Spring Yearling | 429 | 2% | 445 | 2% | 481 | 19% | 459 | 57% | 455 | 54% | 352 | 45% | 220 | 36% | 202 | 42% | 353 | 52% | 465 | 45% |
| | Skagit Summer Fingerling | 316 | 1% | 185 | 2% | 311 | 2% | 292 | 3% | 395 | 1% | 453 | 3% | 501 | 4% | 220 | 1% | 288 | 10% | 101 | 3% |
| | Skykomish Summer Fingerling | 83 | 6% | 235 | 6% | 202 | 2% | 272 | 9% | 429 | 4% | 143 | 22% | 86 | 39% | 76 | 26% | 190 | 55% | 369 | 21% |
| | Stillaguamish Fall Fingerling | 6 | | | | 129 | 4% | 156 | 3% | 324 | 1% | 376 | 20% | 275 | 9% | 357 | 13% | 426 | 9% | 214 | 18% |
| NORTH PUGET SOUND Total | | 1,790 | 1% | 2,022 | 2% | 2,418 | 7% | 3,534 | 19% | 4,514 | 18% | 3,885 | 17% | 2,725 | 16% | 3,070 | 14% | 2,850 | 20% | 3,625 | 18% |
| SOUTH PUGET SOUND | George Adams Fall Fingerling | 546 | 2% | 627 | 6% | 909 | 5% | 551 | 4% | 888 | 10% | 468 | 15% | 518 | 22% | 963 | 18% | 1,021 | 34% | 1,721 | 32% |
| | Green River Fall Fingerling | 456 | 6% | 467 | 3% | 323 | 2% | 661 | 3% | 893 | 6% | 721 | 14% | 641 | 10% | 289 | 19% | 476 | 19% | 360 | 35% |
| | Grovers Creek Fall Fingerling | 779 | 7% | 747 | 5% | 752 | 3% | 879 | 6% | 814 | 17% | 373 | 35% | 558 | 22% | 593 | 32% | 376 | 28% | 690 | 41% |
| | Nisqually Fall Fingerling | 1,149 | 3% | 921 | 1% | 448 | 2% | 1,830 | 2% | 1,891 | 11% | 735 | 13% | 863 | 12% | 1,003 | 18% | 592 | 27% | 748 | 43% |
| | South Puget Sound Fall Yearling | 5 | | 21 | | 226 | 7% | 208 | 5% | 222 | 23% | 63 | 42% | 112 | 59% | 56 | 63% | 227 | 45% | 180 | 38% |
| | White River Hatchery Fingerling | | | | | | | 30 | 4% | 329 | 23% | 52 | 13% | | | | | | | | |
| SOUTH PUGET SOUND Total | | 2,935 | 4% | 2,783 | 4% | 2,659 | 4% | 4,158 | 3% | 5,037 | 12% | 2,411 | 18% | 2,693 | 18% | 2,904 | 22% | 2,692 | 30% | 3,699 | 37% |
| WASHINGTON COAST | Hoko Fall Fingerling | 220 | | 283 | 1% | 238 | 2% | 201 | 2% | 270 | 2% | 127 | | 85 | 5% | 77 | | 209 | 4% | 154 | 5% |
| | Queets Fall Fingerling | 937 | | 1,258 | | 1,317 | | 692 | | 490 | | 513 | | 941 | | 1,135 | | 1,459 | | 1,438 | |
| | Quinault Fall Fingerling | | | | | | | | | | | 112 | | 1,233 | | 1,287 | | 2,475 | | 1,357 | |
| | Quinault Fall Fingerling 2 | | | | | | | | | 5 | 92% | 34 | | 264 | | 404 | | 408 | | 234 | 1% |
| | Sooes Fall Fingerling | 355 | 1% | 362 | 1% | 337 | | 161 | 2% | 37 | | 51 | | 162 | | 94 | 6% | 280 | 2% | 184 | |
| WASHINGTON COAST Total | | 1,512 | 0% | 1,903 | 0% | 1,892 | 0% | 1,055 | 1% | 802 | 1% | 836 | | 2,685 | 0% | 2,997 | 0% | 4,831 | 0% | 3,367 | 0% |

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*Table 4.1 Page 2 of 2.*

| **REGION** | **STOCK** | **2003** | | **2004** | | **2005** | | **2006** | | **2007** | | **2008** | | **2009** | | **2010** | | **2011** | | **2012** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COLUMBIA RIVER | Columbia Lower River Hatchery | 1,063 | 1% | 920 | 0% | 348 | | 45 | | 40 | | 228 | | 327 | 6% | 1,059 | 4% | 444 | 4% | 515 | 9% |
| | Columbia Summers | 4,251 | 0% | 3,883 | 0% | 4,222 | | 2,546 | 0% | 2,672 | 1% | 2,538 | 0% | 2,109 | 6% | 3,330 | 4% | 2,091 | 6% | 1,106 | 14% |
| | Cowlitz Fall Tule | 301 | | 117 | 4% | 96 | | 54 | | 51 | | 63 | 5% | 128 | 5% | 213 | 3% | 126 | 2% | 140 | 6% |
| | Hanford Wild | 644 | | 870 | | 358 | | 325 | | 191 | | 141 | | 202 | | 231 | | 317 | | 441 | 1% |
| | Lewis River Wild | 205 | | 351 | | 190 | | 352 | | 113 | | 42 | | 81 | | 51 | | 156 | 5% | 127 | |
| | Lyons Ferry | 183 | | 78 | | 137 | 5% | 105 | | 101 | | 636 | 0% | 593 | 1% | 1,564 | 8% | 1,132 | 5% | 982 | 16% |
| | Spring Creek Tule | 3,259 | 0% | 3,078 | 0% | 1,414 | | 472 | 1% | 572 | 2% | 1,454 | 2% | 1,286 | 6% | 2,603 | 2% | 1,541 | 3% | 1,719 | 5% |
| | Upriver Brights | 1,056 | | 995 | 0% | 1,499 | | 930 | 0% | 334 | | 419 | | 737 | 1% | 657 | | 1,583 | 0% | 2,140 | 0% |
| | Willamette Spring | 1,325 | 30% | 2,051 | 44% | 766 | 29% | 694 | 42% | 423 | 52% | 849 | 33% | 1,401 | 52% | 4,124 | 62% | 3,873 | 75% | 2,843 | 69% |
| COLUMBIA RIVER Total | | 15,121 | 3% | 15,939 | 6% | 12,369 | 2% | 7,245 | 5% | 6,451 | 4% | 7,718 | 4% | 10,058 | 12% | 17,903 | 17% | 14,251 | 24% | 12,070 | 21% |
| OREGON | Elk River | 2,428 | | 2,536 | | 1,256 | | 1,384 | | 1,319 | | 1,424 | | 1,001 | 0% | 1,266 | 0% | 924 | 0% | 1,257 | 1% |
| | Salmon River | 2,746 | | 2,892 | | 3,144 | | 1,439 | | 516 | | 766 | | 1,417 | 2% | 2,448 | | 2,740 | | 2,317 | 0% |
| OREGON Total | | 5,174 | | 5,428 | | 4,400 | | 2,823 | | 1,835 | | 2,191 | | 2,417 | 1% | 3,714 | 0% | 3,664 | 0% | 3,574 | 1% |

As mass marking increased to include the majority of hatchery production in some areas, MSFs have been implemented in many Puget Sound sport fisheries (including US Strait of Juan de Fuca) beginning in 2003 and on the Columbia River since 2001. Landed catch under MSF regulations has increased to equal nearly all the total landed in Puget Sound marine sport fisheries and a majority in freshwater fisheries (Figure 4.1). In the Columbia River, landed catch in sport fisheries during the spring run migration period are now almost entirely under MSF regulations, with a lower proportion during the summer and fall (Figure 4.2). In 2012, the first fall period MSF occurred in the mainstem Columbia River sport fishery, although MSFs occurred in the tributaries prior to this year. Beginning in 2010, a small portion of the Chinook salmon sport fishery on the Washington-Oregon coast (Areas 1–4) was conducted under MSF regulations. In addition, MSFs occurred in some terminal fishing areas along the Oregon and Washington coast since 2008, and in the BC portion of the Strait of Juan de Fuca since 2008.

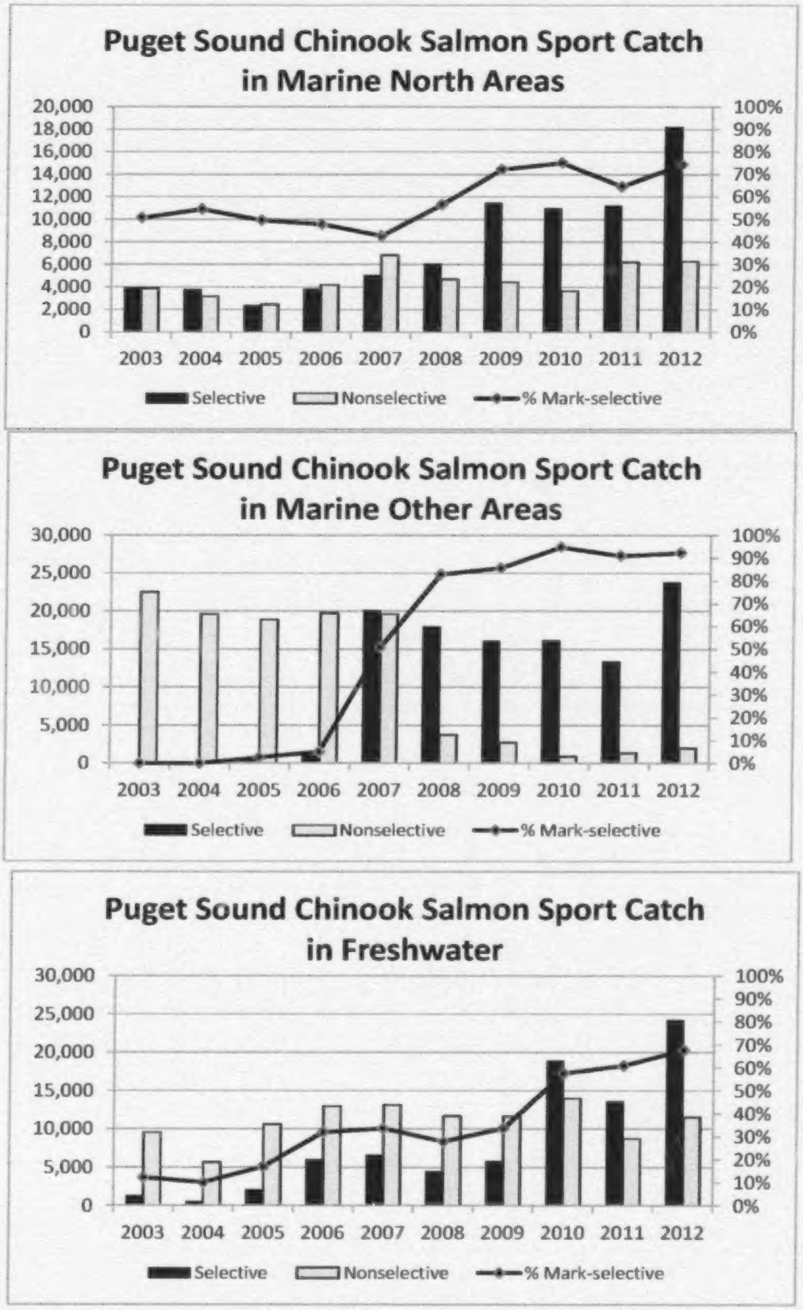

*Figure 4.1. Estimated total number of Chinook salmon landed in mark-selective and nonselective fisheries (left y-axis) and percent of catch in MSFs (right y-axis) in Puget Sound for catch years 2003–2012.*

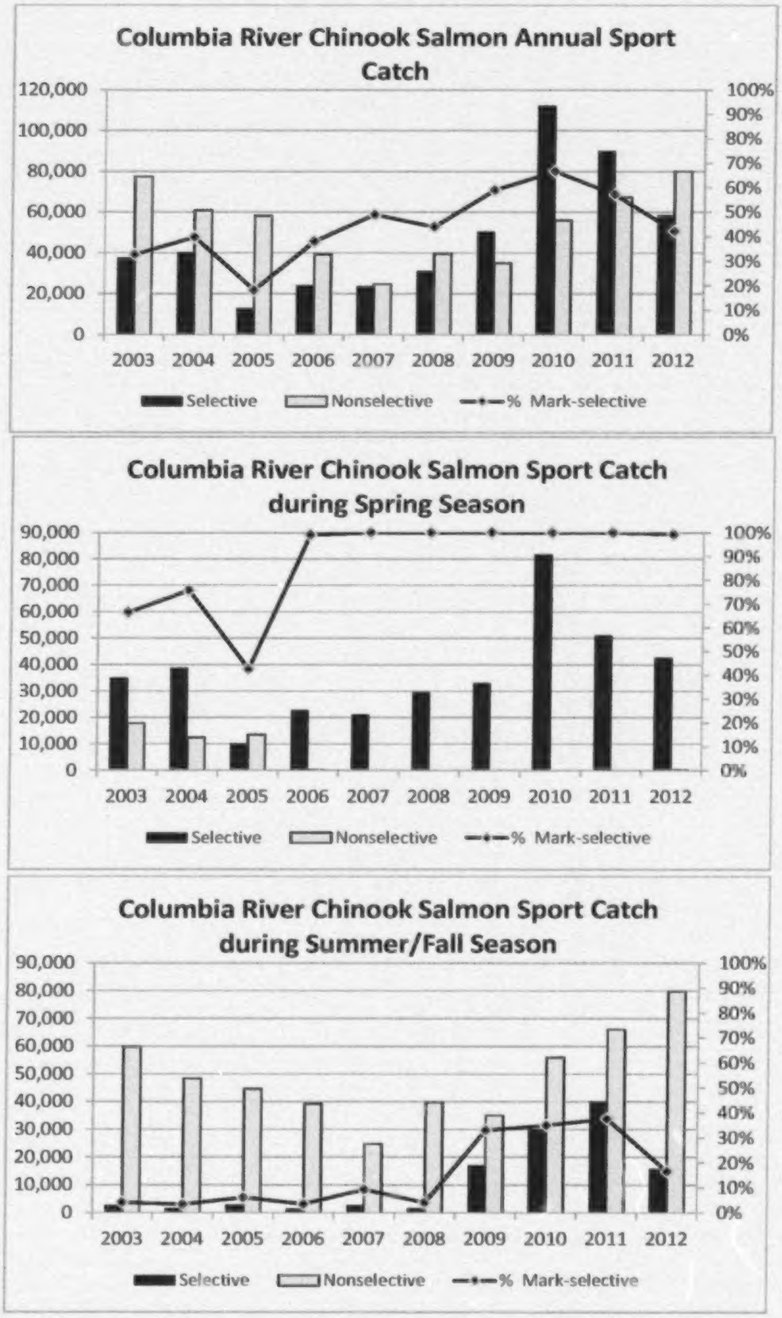

*Figure 4.2. Estimated total catch (left y-axis) in Columbia River mark-selective and nonselective sport fisheries and catches during spring (May–Jun) and summer-fall (Jul–Dec) seasons and percent of catch in MSFs (right y-axis) for catch years 2003–2012.*

## 4.2 IMPACT OF MSFs ON UNMARKED CHINOOK SALMON

The magnitude of impact of a MSF relative to the total exploitation of a stock can be measured using the percentage of the total landed catch in net, sport, and troll fisheries of tagged and marked PSC indicator stocks that occurs in MSFs (Table 4.1). Figure 4.3 shows that in Puget Sound the proportion of marked harvest in MSFs for regional groupings of CWT indicator stocks increased from 2003 to 2012.

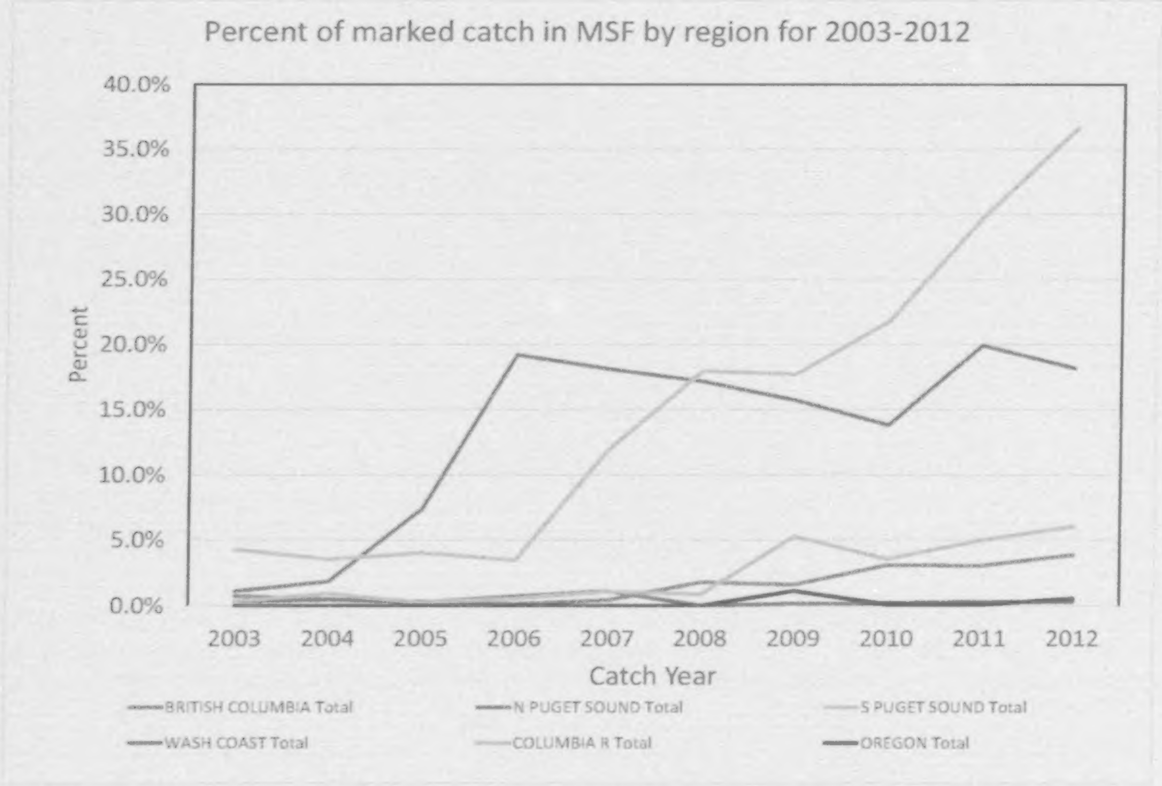

*Figure 4.3. Percent of total fishery CWT recoveries in MSFs for regional groupings of Chinook indicator stocks, 2003–2012. The Columbia River group does not include the Willamette River spring stock.*

PSC indicator stocks that have been double index tagged (DIT) can be used to evaluate the impact of MSFs on the unmarked stocks represented by the unmarked tag group in a DIT pair[2]. The ratio of unmarked to marked fish (λ) for a DIT group provides a relationship between the two tag groups and a measure to evaluate the impact of MSFs on the DIT stock. A comparison of the ratios of unmarked to marked, at release and at escapement, can be used in a test of the null hypothesis of no difference in proportional return of marked and unmarked groups. A positive test statistic occurs when a higher proportion of unmarked fish return to hatchery escapement; this is consistent with the larger harvest of marked fish compared to unmarked fish through MSFs. A negative test statistic occurs when a higher proportion of marked fish return, which could be indicative of sampling problems in the hatchery (i.e., the sampling procedure fails to detect all CWTs from unmarked fish present in the sample), or incorrect assumptions about release mortality rates, multiple encounters, or mark recognition errors. This is a concern when patterns occur over many BYs for a stock or hatchery. If stock-specific MSF impacts are small, then random variation in the CWT sampling procedures or simply random variability in processes, like survival, could result in both positive and negative test statistics in a random pattern across broods.

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[2] A DIT group consists of at least two tag groups, one with the mass mark (or adipose fin clip) and one without the mark. These two tag groups are treated identically except for the mark, and differences in mortality should be due to the MSFs—assuming there is no mark mortality occurring prior to recruitment to the fisheries.

The ratio of the return proportions between the unmarked and marked tagged groups, or the odds ratio, $\frac{\lambda^{unmarked}}{\lambda^{marked}}$ (Agresti 1984), are methods to statistically compare the DIT groups, where an odds ratio of one indicates that the ratio did not change from release to escapement while an odds ratio larger than one indicates a higher removal of marked fish compared to the unmarked DIT fish, which is assumed to be due to MSFs.

Among the DIT stocks examined in Table 4.2, MSF impacts have been statistically identified more often for recent BYs, except for BY 2009, from which only age-2 fish had matured at the time of analysis (Table 4.2). There is double index tagging for several Puget Sound indicator stocks, where MSFs have been ongoing since 2003. The comparison of the proportion of marked and unmarked DIT groups returning was not significant for BYs before 2002 for Puget Sound stocks (Table 4.2). The Puget Sound DIT stocks Skagit Springs (SKS), Skykomish (SKY), Green River (SPS), and Nisqually (NIS), all show significant differences in four or more years. All these Puget Sound DIT stocks except the Green River (GRN) are subject to terminal sport MSFs which target the hatchery production including the marked component of the DIT returns. When releases and recoveries are summed over North and South Puget Sound DIT stocks, the odds ratio is significantly larger than one for BYs 2001–2009 (Figure 4.4), which all have at least two ages returning in years with MSFs. The temporal pattern of the odds ratio for the Puget Sound stocks (Figure 4.4) shows that unmarked fish from south Sound stocks have returned at higher rates than marked fish for all broods since the first DIT releases for the 1998 brood. For north Sounds stocks, unmarked fish have returned at higher rates since the 2002 brood. These patterns are presumably due to MSF impacts.

Two Columbia River stocks have DIT releases: Big Creek for the Lower River Hatchery stock (LRH) and Spring Creek Tule (SPR). The Big Creek stock shows A significantly higher return of unmarked fish for 2007 and 2009, but this stock had not been a DIT stock in earlier years. The MSF impacts (Table 4.1) have all occurred in Washington Area 5 and Washington coastal MSFs for this group. The results for the Spring Creek Tules show a negative significant impact indicating fewer unmarked fish returning to the hatchery in two years. This may be due to a problem with the assumptions of the DIT program (e.g., both marked and unmarked tagged groups are identical except for the mark, equal survival), or due to sampling problems in the hatchery.

*Table 4.2* ***Results for all CWT indicator stocks and broods with DIT data available to test the hypothesis of no difference in the proportion of marked and unmarked DIT release groups returning to the hatchery escapement.***

*Note:* Results for separate DIT releases groups are reported for a few broods for three stocks (SPR, NSF and NIS). Columns with the heading 'Ret' contain the estimated CWTs for the brood. Columns with the heading 'Rel' contain the total release size. The symbol λ indicates the ratio of unmarked to marked fish. A Z-statistic enclosed in brackets indicates that the proportion was greater for marked groups than for unmarked groups in the return to the hatchery; a Z-statistic not in brackets indicates the opposite result.

| | | | | Unmarked | | | Marked | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Stock** | | **Brood Year** | **Significant?** | **Ret** | **Rel** | **Prop. Ret** | **Ret** | **Rel** | **Prop. Ret** | **λ rel** | **λ esc** | **Odds Ratio** | **Oldest age in brood** | **Z-statistic for H(o) of no impact[1]** | **p(0.05)** |
| BRITISH COLUMBIA | CHI | 1998 | Y | 145 | 98,926 | 0.00150 | 301 | 98,095 | 0.00310 | 1.0080 | 0.4810 | 0.4772 | 5 | (7.44) | 0.00 |
| | | 1999 | Y | 403 | 96,193 | 0.00420 | 347 | 97,903 | 0.00350 | 0.9830 | 1.1610 | 1.1811 | 5 | 2.29 | 0.02 |
| | | 2000 | | 170 | 100,056 | 0.00170 | 168 | 99,766 | 0.00170 | 1.0030 | 1.0110 | 1.0080 | 5 | 0.08 | 0.94 |
| | | 2001 | | 230 | 97,227 | 0.00240 | 260 | 99,171 | 0.00260 | 0.9800 | 0.8850 | 0.9031 | 5 | (1.13) | 0.26 |
| | | 2002 | Y | 182 | 99,657 | 0.00180 | 232 | 100,036 | 0.00230 | 0.9960 | 0.7830 | 0.7861 | 5 | (2.45) | 0.01 |
| | | 2003 | | 215 | 48,344 | 0.00440 | 239 | 48,242 | 0.00490 | 1.0020 | 0.9000 | 0.8982 | 5 | (1.14) | 0.25 |
| | | 2004 | | 126 | 100,557 | 0.00130 | 154 | 100,023 | 0.00150 | 1.0050 | 0.8230 | 0.8189 | 5 | (1.67) | 0.09 |
| | | 2005 | Y | 1,116 | 89,159 | 0.01250 | 984 | 87,801 | 0.01120 | 1.0150 | 1.1350 | 1.1182 | 5 | 2.55 | 0.01 |
| | | 2006 | | 109 | 96,305 | 0.00110 | 86 | 95,382 | 0.00090 | 1.0100 | 1.2670 | 1.2545 | 4 | 1.58 | 0.11 |
| | | 2007 | | 866 | 99,632 | 0.00870 | 871 | 99,465 | 0.00880 | 1.0020 | 0.9940 | 0.9920 | 3 | (0.15) | 0.88 |
| | | 2008 | | 175 | 99,944 | 0.00180 | 168 | 99,451 | 0.00170 | 1.0050 | 1.0420 | 1.0368 | 2 | 0.33 | 0.74 |
| COLUMBIA RIVER | LRH | 2006 | | 82 | 221,861 | 0.00037 | 92 | 222,476 | 0.00041 | 0.997 | 0.895 | 0.898 | 5 | (0.70) | 0.48 |
| | | 2007 | Y | 414 | 226,752 | 0.00183 | 287 | 227,193 | 0.00126 | 0.998 | 1.445 | 1.449 | 5 | 4.82 | 0.00 |
| | | 2009 | Y | 388 | 225,203 | 0.00172 | 283 | 225,945 | 0.00125 | 0.997 | 1.371 | 1.376 | 3 | 4.06 | 0.00 |
| | SPR | 2004 | | 95 | 429,068 | 0.00022 | 88 | 447,881 | 0.00020 | 0.958 | 1.085 | 1.132 | 5 | 0.82 | 0.41 |
| | | 2005 | | 1,130 | 446,416 | 0.00253 | 1,210 | 442,908 | 0.00273 | 1.008 | 0.934 | 0.927 | 5 | (1.15) | 0.25 |
| | | 2007 | | 559 | 220,330 | 0.00254 | 496 | 220,504 | 0.00225 | 0.999 | 1.128 | 1.129 | 5 | 1.01 | 0.31 |
| | | | | 573 | 99,839 | 0.00574 | 506 | 100,121 | 0.00505 | 0.997 | 1.133 | 1.137 | 5 | 1.04 | 0.30 |
| | | | | 1,132 | 320,169 | 0.00354 | 1,001 | 320,625 | 0.00312 | 0.999 | 1.130 | 1.132 | 5 | 1.44 | 0.15 |
| | | 2008 | Y | 387 | 260,052 | 0.00149 | 378 | 179,920 | 0.00210 | 1.445 | 1.024 | 0.708 | 4 | (2.89) | 0.00 |
| | | | | 313 | 179,937 | 0.00174 | 280 | 179,973 | 0.00156 | 1.000 | 1.117 | 1.117 | 4 | 0.85 | 0.40 |
| | | | | 700 | 439,989 | 0.00159 | 658 | 359,893 | 0.00183 | 1.223 | 1.064 | 0.870 | 4 | (1.60) | 0.11 |
| | | 2009 | | 232 | 204,772 | 0.00113 | 192 | 204,288 | 0.00094 | 1.002 | 1.205 | 1.202 | 3 | 1.16 | 0.25 |
| | | | | 567 | 199,385 | 0.00284 | 468 | 199,336 | 0.00235 | 1.000 | 1.210 | 1.211 | 3 | 1.88 | 0.06 |
| | | | Y | 798 | 404,157 | 0.00198 | 660 | 403,624 | 0.00164 | 1.001 | 1.209 | 1.208 | 3 | 2.20 | 0.03 |
| NORTH PUGET SOUND | NSF | 1998 | | 772 | 168,574 | 0.00458 | 701 | 167,136 | 0.00419 | 1.009 | 1.102 | 1.093 | 5 | 0.75 | 0.45 |
| | | 1999 | | 387 | 200,294 | 0.00193 | 509 | 198,085 | 0.00257 | 1.011 | 0.759 | 0.750 | 5 | (1.96) | 0.05 |
| | | 2000 | | 213 | 199,511 | 0.00107 | 199 | 197,364 | 0.00101 | 1.011 | 1.073 | 1.061 | 5 | 0.38 | 0.71 |

–continued–

*Table 4.2* *Page 2 of 4.*

| Stock | | Brood Year | Significant? | Unmarked | | | Marked | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ret | Rel | Prop. Ret | Ret | Rel | Prop. Ret | λ rel | λ esc | Odds Ratio | Oldest age in brood | Z-statistic for H(o) of no impact[1] | p(0.05) |
| NORTH PUGET SOUND (cont) | NSF (cont) | 2001 | Y | 336 | 98,860 | 0.00339 | 406 | 97,528 | 0.00416 | 1.014 | 0.827 | 0.815 | 5 | (2.69) | 0.01 |
| | | | | 60 | 99,062 | 0.00061 | 78 | 98,711 | 0.00079 | 1.004 | 0.774 | 0.771 | 5 | (1.46) | 0.14 |
| | | | Y | 396 | 197,922 | 0.00200 | 484 | 196,239 | 0.00247 | 1.009 | 0.818 | 0.811 | 5 | (3.00) | 0.00 |
| | | 2002 | | 24 | 206,479 | 0.00012 | 27 | 203,647 | 0.00013 | 1.014 | 0.889 | 0.877 | 5 | (0.47) | 0.64 |
| | | 2003 | | 79 | 198,270 | 0.00040 | 76 | 202,184 | 0.00037 | 0.981 | 1.041 | 1.062 | 5 | 0.37 | 0.71 |
| | | 2004 | | 46 | 185,400 | 0.00025 | 30 | 179,380 | 0.00016 | 1.034 | 1.553 | 1.503 | 5 | 1.73 | 0.08 |
| | | 2005 | | 228 | 204,021 | 0.00112 | 210 | 203,918 | 0.00103 | 1.001 | 1.082 | 1.082 | 5 | 0.81 | 0.42 |
| | | 2006 | | 41 | 134,773 | 0.00031 | 28 | 143,841 | 0.00020 | 0.937 | 1.459 | 1.557 | 5 | 1.81 | 0.07 |
| | | 2007 | Y | 209 | 206,670 | 0.00101 | 171 | 206,867 | 0.00082 | 0.999 | 1.224 | 1.225 | 5 | 1.97 | 0.05 |
| | | 2008 | | 154 | 175,656 | 0.00088 | 122 | 171,083 | 0.00072 | 1.027 | 1.256 | 1.224 | 4 | 1.66 | 0.10 |
| | | 2009 | | 54 | 197,625 | 0.00027 | 49 | 195,703 | 0.00025 | 1.010 | 1.106 | 1.095 | 3 | 0.46 | 0.65 |
| | SAM | 1998 | | 831 | 198,241 | 0.00419 | 957 | 196,029 | 0.00488 | 1.011 | 0.868 | 0.858 | 5 | (1.79) | 0.07 |
| | | 1999 | | 311 | 177,940 | 0.00175 | 276 | 168,299 | 0.00164 | 1.057 | 1.126 | 1.065 | 5 | 0.38 | 0.70 |
| | | 2000 | Y | 65 | 149,187 | 0.00043 | 113 | 146,129 | 0.00077 | 1.021 | 0.574 | 0.562 | 5 | (2.55) | 0.01 |
| | | 2001 | Y | 176 | 169,452 | 0.00104 | 96 | 173,971 | 0.00055 | 0.974 | 1.839 | 1.888 | 5 | 2.70 | 0.01 |
| | | 2002 | | 137 | 199,133 | 0.00069 | 137 | 197,111 | 0.00069 | 1.010 | 0.999 | 0.989 | 5 | (0.07) | 0.94 |
| | | 2003 | | 330 | 195,566 | 0.00169 | 331 | 200,153 | 0.00165 | 0.977 | 0.996 | 1.020 | 5 | 0.19 | 0.85 |
| | | 2004 | | 189 | 201,803 | 0.00094 | 210 | 196,576 | 0.00107 | 1.027 | 0.900 | 0.876 | 5 | (0.97) | 0.33 |
| | | 2005 | | 802 | 182,920 | 0.00438 | 778 | 201,655 | 0.00386 | 0.907 | 1.031 | 1.137 | 5 | 1.75 | 0.08 |
| | | 2006 | | 270 | 205,708 | 0.00131 | 224 | 206,496 | 0.00109 | 0.996 | 1.204 | 1.208 | 5 | 1.35 | 0.18 |
| | | 2007 | | 873 | 216,849 | 0.00403 | 749 | 211,571 | 0.00354 | 1.025 | 1.165 | 1.137 | 5 | 1.53 | 0.13 |
| | | 2008 | | 185 | 201,997 | 0.00092 | 185 | 201,775 | 0.00092 | 1.001 | 1.002 | 1.001 | 4 | 0.01 | 0.99 |
| | | 2009 | | 479 | 203,497 | 0.00235 | 419 | 202,005 | 0.00207 | 1.007 | 1.144 | 1.135 | 3 | 1.83 | 0.07 |
| | SKS | 1998 | | 77 | 67,098 | 0.00115 | 77 | 65,619 | 0.00118 | 1.023 | 0.999 | 0.977 | 5 | (0.08) | 0.94 |
| | | 1999 | | 857 | 72,629 | 0.01180 | 816 | 71,246 | 0.01146 | 1.019 | 1.050 | 1.030 | 5 | 0.55 | 0.58 |
| | | 2000 | | 780 | 73,356 | 0.01063 | 778 | 74,091 | 0.01050 | 0.990 | 1.003 | 1.013 | 5 | 0.25 | 0.80 |
| | | 2001 | | 649 | 72,996 | 0.00890 | 620 | 76,520 | 0.00811 | 0.954 | 1.047 | 1.098 | 5 | 1.66 | 0.10 |
| | | 2002 | Y | 561 | 60,000 | 0.00935 | 436 | 59,777 | 0.00730 | 1.004 | 1.287 | 1.285 | 5 | 3.92 | 0.00 |
| | | 2003 | Y | 340 | 75,418 | 0.00451 | 243 | 74,590 | 0.00326 | 1.011 | 1.397 | 1.383 | 5 | 3.86 | 0.00 |
| | | 2004 | Y | 720 | 71,942 | 0.01001 | 466 | 73,668 | 0.00633 | 0.977 | 1.543 | 1.586 | 5 | 7.71 | 0.00 |
| | | 2005 | Y | 121 | 74,467 | 0.00163 | 88 | 74,633 | 0.00118 | 0.998 | 1.377 | 1.380 | 5 | 2.30 | 0.02 |
| | | 2006 | Y | 216 | 66,540 | 0.00325 | 186 | 70,079 | 0.00265 | 0.949 | 1.163 | 1.226 | 5 | 2.02 | 0.04 |
| | | 2007 | Y | 282 | 58,614 | 0.00481 | 225 | 58,503 | 0.00385 | 1.002 | 1.251 | 1.250 | 5 | 2.49 | 0.01 |
| | | 2008 | Y | 564 | 75,683 | 0.00745 | 386 | 76,752 | 0.00503 | 0.986 | 1.461 | 1.485 | 4 | 5.97 | 0.00 |

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*Table 4.2* *Page 3 of 4.*

| Stock | | Brood Year | Significant? | Unmarked | | | Marked | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ret | Rel | Prop. Ret | Ret | Rel | Prop. Ret | λ rel | λ esc | Odds Ratio | Oldest age in brood | Z-statistic for H(o) of no impact[1] | p(0.05) |
| NORTH PUGET SOUND (cont) | SKS | 2009 | | 29 | 80,500 | 0.00036 | 17 | 80,500 | 0.00021 | 1.000 | 1.707 | 1.708 | 3 | 1.77 | 0.08 |
| | SKY | 2000 | | 389 | 209,520 | 0.00186 | 358 | 205,008 | 0.00175 | 1.022 | 1.088 | 1.064 | 5 | 0.78 | 0.43 |
| | | 2001 | | 243 | 197,946 | 0.00123 | 245 | 196,023 | 0.00125 | 1.010 | 0.994 | 0.984 | 5 | (0.17) | 0.86 |
| | | 2002 | Y | 408 | 197,105 | 0.00207 | 325 | 195,075 | 0.00167 | 1.010 | 1.255 | 1.242 | 5 | 2.83 | 0.00 |
| | | 2003 | Y | 469 | 173,116 | 0.00271 | 416 | 176,427 | 0.00236 | 0.981 | 1.128 | 1.150 | 5 | 1.99 | 0.05 |
| | | 2004 | Y | 966 | 199,529 | 0.00484 | 814 | 200,398 | 0.00406 | 0.996 | 1.186 | 1.192 | 5 | 3.51 | 0.00 |
| | | 2005 | | 239 | 206,091 | 0.00116 | 204 | 204,637 | 0.00100 | 1.007 | 1.174 | 1.165 | 5 | 1.54 | 0.12 |
| | | 2006 | | 297 | 206,362 | 0.00144 | 290 | 205,344 | 0.00141 | 1.005 | 1.024 | 1.019 | 5 | 0.21 | 0.83 |
| | | 2007 | | 282 | 199,678 | 0.00141 | 253 | 199,858 | 0.00127 | 0.999 | 1.113 | 1.114 | 5 | 1.21 | 0.23 |
| | | 2008 | Y | 651 | 202,000 | 0.00322 | 500 | 201,194 | 0.00248 | 1.004 | 1.302 | 1.298 | 4 | 4.29 | 0.00 |
| | | 2009 | | 147 | 200,265 | 0.00073 | 122 | 201,000 | 0.00061 | 0.996 | 1.208 | 1.213 | 3 | 1.54 | 0.12 |
| SOUTH PUGET SOUND | GAD | 1998 | | 700 | 224,228 | 0.00312 | 681 | 223,343 | 0.00305 | 1.004 | 1.028 | 1.024 | 5 | 0.45 | 0.66 |
| | | 1999 | | 501 | 218,728 | 0.00229 | 449 | 208,330 | 0.00215 | 1.050 | 1.117 | 1.064 | 5 | 0.96 | 0.34 |
| | | 2000 | | 508 | 225,071 | 0.00226 | 480 | 223,009 | 0.00215 | 1.009 | 1.059 | 1.049 | 5 | 0.75 | 0.45 |
| | | 2001 | | 493 | 210,039 | 0.00235 | 510 | 223,933 | 0.00228 | 0.938 | 0.968 | 1.032 | 5 | 0.49 | 0.63 |
| | | 2002 | | 912 | 208,727 | 0.00437 | 859 | 209,531 | 0.00410 | 0.996 | 1.062 | 1.066 | 5 | 1.33 | 0.18 |
| | | 2003 | Y | 601 | 223,637 | 0.00269 | 508 | 224,905 | 0.00226 | 0.994 | 1.182 | 1.189 | 5 | 2.79 | 0.01 |
| | | 2004 | | 307 | 223,927 | 0.00137 | 280 | 224,882 | 0.00124 | 0.996 | 1.099 | 1.104 | 5 | 1.16 | 0.25 |
| | | 2005 | Y | 1,412 | 225,257 | 0.00627 | 1,224 | 225,216 | 0.00543 | 1.000 | 1.154 | 1.155 | 5 | 3.54 | 0.00 |
| | | 2006 | | 478 | 225,937 | 0.00212 | 418 | 215,124 | 0.00194 | 1.050 | 1.145 | 1.090 | 5 | 1.26 | 0.21 |
| | | 2007 | Y | 1,933 | 221,008 | 0.00875 | 1,561 | 219,881 | 0.00710 | 1.005 | 1.238 | 1.234 | 5 | 6.11 | 0.00 |
| | | 2008 | Y | 470 | 225,935 | 0.00208 | 398 | 226,984 | 0.00175 | 0.995 | 1.180 | 1.186 | 4 | 2.49 | 0.01 |
| | | 2009 | Y | 2,103 | 227,548 | 0.00924 | 1,719 | 227,151 | 0.00757 | 1.002 | 1.223 | 1.223 | 3 | 6.10 | 0.00 |
| | GRN | 1998 | | 644 | 197,824 | 0.00326 | 592 | 188,118 | 0.00315 | 1.052 | 1.088 | 1.035 | 5 | 0.60 | 0.55 |
| | | 1999 | | 273 | 197,889 | 0.00138 | 264 | 193,300 | 0.00137 | 1.024 | 1.033 | 1.009 | 5 | 0.10 | 0.92 |
| | | 2000 | | 223 | 202,658 | 0.00110 | 197 | 194,248 | 0.00101 | 1.043 | 1.131 | 1.085 | 5 | 0.82 | 0.41 |
| | | 2001 | Y | 108 | 162,160 | 0.00066 | 88 | 178,119 | 0.00049 | 0.910 | 1.224 | 1.345 | 5 | 2.05 | 0.04 |
| | | 2002 | Y | 493 | 198,321 | 0.00248 | 550 | 192,443 | 0.00286 | 1.031 | 0.896 | 0.869 | 5 | (2.26) | 0.02 |
| | | 2003 | | 282 | 197,541 | 0.00143 | 246 | 197,726 | 0.00125 | 0.999 | 1.143 | 1.145 | 5 | 1.54 | 0.12 |
| | | 2004 | Y | 578 | 204,269 | 0.00283 | 507 | 204,698 | 0.00248 | 0.998 | 1.138 | 1.141 | 5 | 2.14 | 0.03 |
| | | 2005 | Y | 948 | 198,542 | 0.00477 | 823 | 196,353 | 0.00419 | 1.011 | 1.152 | 1.140 | 5 | 2.70 | 0.01 |
| | | 2006 | Y | 427 | 204,385 | 0.00209 | 365 | 204,795 | 0.00178 | 0.998 | 1.170 | 1.173 | 5 | 2.19 | 0.03 |
| | | 2007 | Y | 825 | 202,635 | 0.00407 | 687 | 202,671 | 0.00339 | 1.000 | 1.202 | 1.203 | 5 | 3.52 | 0.00 |
| | | 2008 | | 272 | 191,280 | 0.00142 | 259 | 191,808 | 0.00135 | 0.997 | 1.049 | 1.052 | 4 | 0.55 | 0.59 |

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*Table 4.2.* *Page 4 of 4.*

| Stock | | Brood Year | Significant? | Unmarked | | | Marked | | | λ rel | λ esc | Odds Ratio | Oldest age in brood | Z-statistic for H(o) of no impact[1] | p(0.05) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ret | Rel | Prop. Ret | Ret | Rel | Prop. Ret | | | | | | |
| S PUGET SOUND (cont) | GRN | 2009 | | 469 | 199,615 | 0.00235 | 411 | 195,175 | 0.00211 | 1.023 | 1.141 | 1.116 | 3 | 1.50 | 0.13 |
| | GRO | 1999 | | 1,219 | 180,536 | 0.00675 | 1,141 | 181,132 | 0.00630 | 0.997 | 1.069 | 1.073 | 5 | 1.69 | 0.09 |
| | | 2000 | | 693 | 206,563 | 0.00336 | 647 | 203,754 | 0.00318 | 1.014 | 1.070 | 1.056 | 5 | 0.99 | 0.32 |
| | | 2001 | | 532 | 203,840 | 0.00261 | 487 | 203,509 | 0.00239 | 1.002 | 1.092 | 1.091 | 5 | 1.38 | 0.17 |
| | | 2002 | | 875 | 194,233 | 0.00451 | 851 | 198,987 | 0.00428 | 0.976 | 1.029 | 1.055 | 5 | 1.10 | 0.27 |
| | | 2003 | Y | 1,431 | 151,492 | 0.00945 | 1,348 | 163,799 | 0.00823 | 0.925 | 1.062 | 1.150 | 5 | 3.65 | 0.00 |
| | | 2004 | Y | 1,133 | 133,455 | 0.00849 | 872 | 118,197 | 0.00738 | 1.129 | 1.299 | 1.151 | 5 | 3.06 | 0.00 |
| | | 2005 | Y | 1,136 | 169,954 | 0.00668 | 1,084 | 136,519 | 0.00794 | 1.245 | 1.048 | 0.840 | 5 | (3.74) | 0.00 |
| | | 2006 | | 875 | 185,397 | 0.00472 | 862 | 185,975 | 0.00464 | 0.997 | 1.014 | 1.018 | 5 | 0.34 | 0.74 |
| | | 2007 | | 1,935 | 199,622 | 0.00969 | 1,960 | 199,251 | 0.00984 | 1.002 | 0.987 | 0.985 | 5 | (0.44) | 0.66 |
| | | 2008 | | 547 | 200,006 | 0.00273 | 469 | 186,978 | 0.00251 | 1.070 | 1.167 | 1.091 | 4 | 1.36 | 0.17 |
| | | 2009 | Y | 1,347 | 193,417 | 0.00697 | 1,158 | 200,431 | 0.00578 | 0.965 | 1.163 | 1.207 | 3 | 4.63 | 0.00 |
| | NIS | 1998 | Y | 668 | 192,165 | 0.00348 | 485 | 202,103 | 0.00240 | 0.951 | 1.377 | 1.449 | 5 | 6.00 | 0.00 |
| | | 1999 | | 508 | 194,985 | 0.00260 | 486 | 199,030 | 0.00244 | 0.980 | 1.045 | 1.067 | 5 | 1.01 | 0.31 |
| | | 2000 | | 331 | 85,627 | 0.00386 | 319 | 79,065 | 0.00403 | 1.083 | 1.037 | 0.957 | 5 | (0.55) | 0.58 |
| | | | | 259 | 88,998 | 0.00292 | 266 | 90,078 | 0.00295 | 0.988 | 0.976 | 0.988 | 5 | (0.14) | 0.89 |
| | | | | 590 | 174,625 | 0.00338 | 585 | 169,143 | 0.00346 | 1.032 | 1.009 | 0.977 | 5 | (0.39) | 0.70 |
| | | 2001 | | 225 | 107,009 | 0.00210 | 192 | 108,387 | 0.00177 | 0.987 | 1.174 | 1.189 | 5 | 1.74 | 0.08 |
| | | | | 178 | 107,050 | 0.00166 | 176 | 106,103 | 0.00166 | 1.009 | 1.006 | 0.997 | 5 | (0.03) | 0.98 |
| | | | | 403 | 214,059 | 0.00188 | 368 | 214,490 | 0.00172 | 0.998 | 1.093 | 1.096 | 5 | 1.25 | 0.21 |
| | | 2002 | Y | 572 | 99,688 | 0.00573 | 426 | 88,909 | 0.00479 | 1.121 | 1.343 | 1.199 | 5 | 2.79 | 0.01 |
| | | | Y | 500 | 92,560 | 0.00540 | 382 | 91,385 | 0.00419 | 1.013 | 1.307 | 1.292 | 5 | 3.71 | 0.00 |
| | | | Y | 1,071 | 192,248 | 0.00557 | 808 | 180,294 | 0.00448 | 1.066 | 1.326 | 1.245 | 5 | 4.63 | 0.00 |
| | | 2003 | Y | 1,235 | 203,624 | 0.00607 | 1,096 | 207,975 | 0.00527 | 0.979 | 1.127 | 1.152 | 5 | 3.30 | 0.00 |
| | | 2004 | Y | 1,102 | 209,905 | 0.00525 | 924 | 208,724 | 0.00443 | 1.006 | 1.193 | 1.187 | 5 | 3.71 | 0.00 |
| | | 2005 | Y | 675 | 127,293 | 0.00530 | 512 | 120,154 | 0.00426 | 1.059 | 1.319 | 1.247 | 5 | 3.61 | 0.00 |
| | | 2006 | Y | 445 | 185,397 | 0.00240 | 352 | 185,975 | 0.00189 | 0.997 | 1.263 | 1.268 | 5 | 3.00 | 0.00 |
| | | 2007 | Y | 1,435 | 179,625 | 0.00799 | 1,232 | 180,974 | 0.00681 | 0.993 | 1.165 | 1.175 | 5 | 3.82 | 0.00 |
| | | 2008 | Y | 523 | 206,098 | 0.00254 | 389 | 206,480 | 0.00188 | 0.998 | 1.345 | 1.348 | 4 | 4.27 | 0.00 |
| | | 2009 | Y | 834 | 201,544 | 0.00414 | 656 | 201,099 | 0.00326 | 1.002 | 1.272 | 1.270 | 3 | 4.46 | 0.00 |

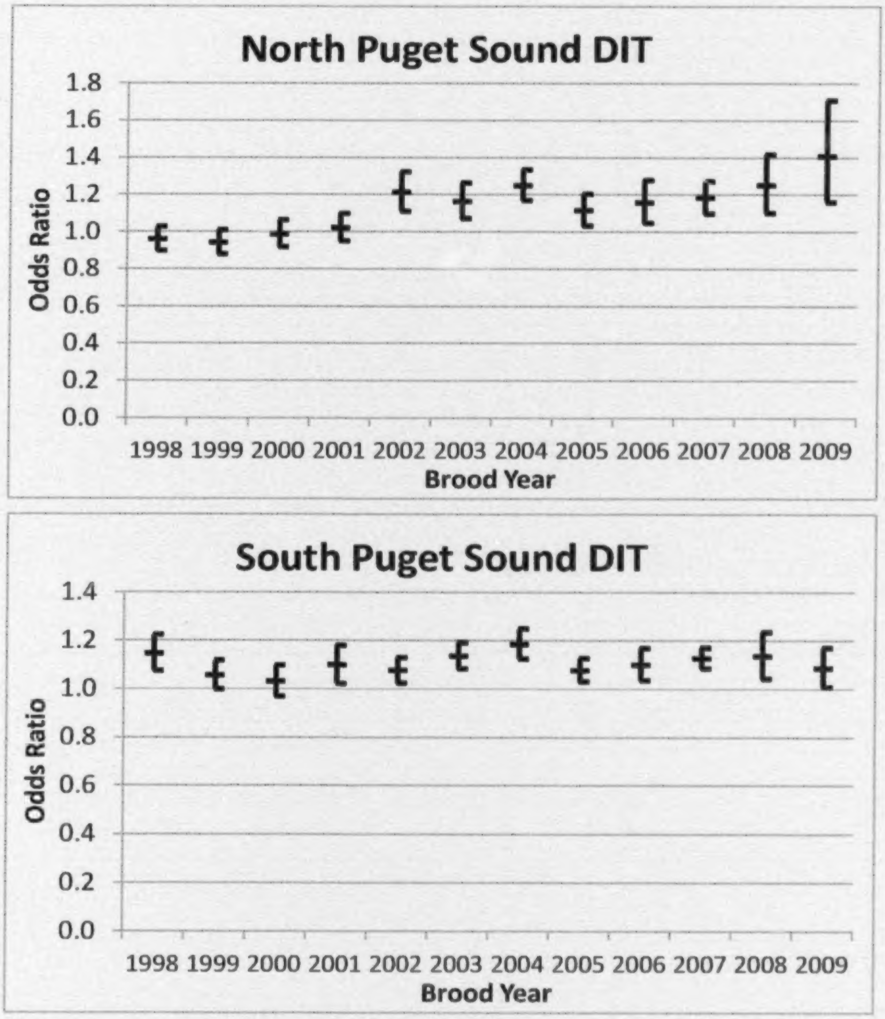

*Figure 4.4 Estimated odds ratios (+/–95% confidence interval) for Puget Sound Chinook DIT stocks combined.*

*Note:* 2001 is the first brood year for which all ages were exposed to MSFs; recoveries for the most recent brood year are for age-2 fish only.

In BC, the Chilliwack River Hatchery stock is subject to preterminal MSFs in US marine areas around Puget Sound and in US and Canadian MSFs in Juan de Fuca Strait. There are no terminal MSFs targeting this stock in Canadian marine or freshwater areas. Four broods have significant results, but two of these had significantly higher returns of unmarked fish, possibly indicating either problems with sampling or assumptions.

# 5 PROGRESS REPORT ON IMPROVEMENTS TO THE COASTWIDE CWT PROGRAM

## 5.1 BACKGROUND

The Chinook chapter of Annex IV of the 2009 Pacific Salmon Treaty Agreement provides a directive for a Coded Wire Tag Improvement Program in paragraph 3(b) as follows:

> The Parties agree to provide $7.5 million each in their respective currencies (subject to the availability of funds) to implement over a five year period beginning no later than 2010 within their respective jurisdictions critical improvements to the coastwide coded wire tagging program operated by their respective management agencies.

The Commission established a bilateral body, the Coded Wire Tag Improvement Team (CWTIT) in November of 2009 to provide recommendations annually to the Commission and the Parties to implement improvements identified in the Pacific Salmon Commission Technical Report Number 25 (PSC 2008). Although Parties prioritize actions based on their specific requirements to improve the precision and accuracy of statistics used by the CTC in support of the Chinook salmon management regime, the CWTIT also performs a coordination role to optimize the benefits of the CWT programs operated in the various jurisdictions through an annual workshop and other coordination efforts.

The CWTIT is required to report annually to the Commission each January and to document progress to date in the annual CTC reports. The results for past funding (2009–2011) are reported in CTC 2012a, 2012b, and 2013. The format for reporting has changed in this report. A summary of the CWT Improvement Program (CWTIP) for all preceding years is provided here, along with a summary of projects approved for 2014. Details for individual projects, including a description, cost, accomplishments and benefits is provided for each project funded in 2014 in Appendix L.

Canada implemented CWTIP in 2009, a year earlier than in the US due to differences in the beginning of the fiscal years. 2013–14 was the final year of funding for this initiative in Canada; the program is in its final year in the U.S (2014–15). Total expenditures by Party and PSC Technical Report Number 25 (PSC 2008) issue are reported in Table 5.1. Projects fall under two main categories: (1) improvements in CWT tagging or sampling and in harvest or escapement estimation, and (2) improvements in data coordination and reporting.

Canada has invested close to $1.5 million annually on a total of 57 individual projects. The majority of investment has occurred on multiyear projects under category 1 (improvements to CWT tagging, sampling, harvest and escapement estimation). The US has invested $1.5 million annually on a total of 37 individual projects. Like Canada, the majority has been spent on category 1, but a substantial investment has been made into improvement in category 2 as well, which primarily includes major upgrades to the CWT reporting systems in Oregon and Washington, and minor upgrades to the same in Alaska.

*Table 5.1 Total investment (2009–2013) in the CWT improvement program by Party and by issue identified in PSC Technical Report 25.*

*Note*: Issue priority for each Party as identified in PSC Technical Report 25 (PSC 2008) is rated as low, medium or high (L, M and H) under the column headed by *Priority TR 25*. The Canadian summary is for five years and the US summary is for four years.

| | | Canada | | | US | |
|---|---|---|---|---|---|---|
| **Issue No.** | **Tech Report No. 25 Issues** | **Priority TR 25** | **Total Funding** | **% Funding** | **Total Funding** | **% Funding** |
| CWT Tagging and Sampling | | | | | | |
| 1 | Representation of Production Regions | H | $732, 761 | 9.9% | $1,106,463 | 18.5% |
| 2 | Determination of Tagging Levels | M–H | $2,214,074 | 29.8% | $153,432 | 2.6% |
| 3 | Representation of Hatchery Production | L | $5,500 | 0.1% | $132,695 | 2.2% |
| 4 | Low Sampling Rates in Terminal Fisheries | M–H | $698,500 | 9.4% | $417,048 | 7.0% |
| 5 | Low Sample Rates in Escapements | L–M | $403,765 | 5.4% | $5,628 | 0.1% |
| 6 | Uncertainty in Estimates of Escapement or Catch | L–H | $425,295 | 5.7% | $133,339 | 2.2% |
| 7 | Low Sample Rates in Highly Mixed Stock Fisheries | L–M | $449,900 | 6.1% | $1,770,150 | 29.5% |
| 8 | Uncertainty in Estimates of Catch in Mixed Stock Fisheries | M–H | $324,100 | 4.4% | $14,483 | 0.2% |
| 9 | Nonrepresentative Sampline | M–H | $326,215 | 4.4% | $111,604 | 1.9% |
| 10 | Incomplete Coverage of Fisheries of Escapement | L–M | $611,355 | 8.2% | $126,670 | 2.1% |
| 11 | Voluntary Sport Fishery Sampling Programs | H | $423,940 | 5.7% | $0 | 0.0% |
| 12 | Sampling to Facilitate MSF Evaluations | L | $101,040 | 1.4% | $330,595 | 5.5% |
| | **Subtotal** | | $6,716,445 | 90.5% | $4,302,467 | 71.8% |
| Data Coordination and Reporting | | | | | | |
| 13 | Timeliness of Reporting | H | $176,000 | 2.4% | $723,585 | 12.1% |
| 14 | Incomplete/No Exchange of CWT data | | $188,100 | 2.5% | $283,078 | 4.7% |
| 15 | Inter/Intra Agency Coordination | M | $166,500 | 2.2% | $82,775 | 1.4% |
| 16 | Unclear Authority to Enforce/Establish Protocols | | $0 | 0.0% | $0 | 0.0% |
| 17 | Updating CWT Data is Difficult/Cannot be Tracked | | $88,000 | 1.2% | $149,629 | 2.5% |
| 18 | Validation is Inadequate for Current uses of CWT Data | | $88,000 | 1.2% | $167,850 | 2.8% |
| 19 | Lack of formal Designation of RMPC as US Public Database and Lack of Adequate Funding Support | | $0 | 0.0% | $143,464 | 2.4% |
| DTT | Funding Guidance | | $0 | 0.0% | $141,586 | 2.4% |
| | **Subtotal** | | $706,600 | 9.5% | $1,691,966 | 28.2% |
| | **Total 2009-2013** | | $7,423,045 | | $5,994,433 | |

## 5.2 BENEFITS AND PERFORMANCE OF CWT IMPROVEMENTS TO DATE

Projects funded for 2009–2013 under the CWTIP are summarized by issue in Appendix L. Some individual projects address multiple issues, meaning that the allocation of funding by issue is approximate.

In addition to funding provided by the Parties, Northwest Marine Technology, Inc. has worked with agencies to defray costs of increasing tagging levels, and to reduce costs and improve availability of equipment, such as CWT detectors. The objective of these measures is to reduce uncertainties about CWT-derived statistics.

CWTIP-funded projects can be usefully categorized as (1) legacy, (2) operational, and (3) data improvements.

*Legacy* projects are those that will provide lasting improvements to ongoing database and reporting issues, reduce costs, or improve efficiencies. Examples of legacy projects include the following:

a. DFO Salmonid Enhancement Program database improvements. This project will improve CWT data coordination and reporting procedures, and develop a formal set of Best Practices for the coordination (collection, transfer and management) of CWT heads and data at all DFO escapement projects. Archived escapement data from DFO enhancement programs are being reviewed to ensure that standardized analytical techniques and data verification procedures have been employed.

b. DFO Mark Recovery Program database and data exchange improvements. DFO has made significant progress in reviewing and converting the legacy FORTRAN system to current technology and improving interfaces within DFO reporting systems (hatcheries system, catch monitoring system, and escapement systems). The query interface has also been updated to a faster, easier system with many new features for all users, from beginner to advanced. These projects will provide lasting benefits for access to information and timeliness of data exchange to the Regional Mark Information Centre. Data improvements include validation and corrections to data and historical algorithms.

c. Improvements to the DFO Fisheries Operating System commercial database will establish standard protocols for reporting and will improve timeliness of reporting and availability of final commercial catch estimates including test fishing data.

d. Updating and integration of Oregon's computer programs to improve the consistency, timeliness, and accuracy of CWT data reporting.

e. Updating several aspects of Washington's CWT reporting system to improve the consistency, timeliness, data retrieval and accuracy of CWT data reporting.

f. Development of a Decision-Theoretic Tool for planning individual or multiple CWT improvement programs (tagging, sampling, catch/escapement estimation).

g. Purchase of new or replacement equipment, such as CWT detectors and microscopes.

h. The development of indirect methods to estimate CWT recoveries by age and stock in freshwater sport fisheries, from the three-year study in Puget Sound, which provides the basis to correct past estimates and provide estimates in the future.

*Operational* projects are of three general types: (1) projects to maintain existing capabilities; (2) projects that reduce costs of sampling, processing, or reporting CWT data or improving the timeliness of availability; and (3) projects that evaluate the feasibility of developing and applying new estimation methods. Examples of operational projects include the following:

a. Increased coverage and sampling of terminal fisheries (Central Coast marine and fresh water sport, Strait of Georgia marine sport, Chilliwack River sport and Lower Fraser First Nations fisheries) resulting in increased accuracy and precision of exploitation rate estimates for CWT indicators.

b. Increased effort in monitoring and sampling indicator escapement programs resulting in increased accuracy and precision of indicator cohort abundance, survival rates, and exploitation rates.

c. MRP, FOS. and SEP database improvements which will provide more timely and accurate reporting of CWT data and access to data required for assessing fishery impacts.

d. Methods to use surrogate (indirect) data to estimate CWT recoveries in sport fisheries.

e. The use of detection wands in SEAK to reduce freight, CWT lab storage, and processing costs by not shipping heads from adipose-clipped salmon without CWTs.

It has been difficult at times to separate improvement projects from programs conducted by agencies using other core funding. For example, in Canada some CWTIP projects were developed to estimate costs and quality of information that would result from the redesign of CWT sampling programs. In the US, operational projects have included funding provided to address the loss of funding from Anadromous Fish Act grants for CWT sampling in Washington and Oregon. Operational projects have also included projects to evaluate the feasibility of methods to reduce costs or improve the timelines of providing CWT data.

*Data Improvement* projects involve indicator stock tagging and sampling programs to fill information gaps. The full realization of the improvements resulting from these types of CWT projects depends upon the availability of funding beyond the anticipated end of the CWTIP. Examples of such projects include increased representation of production regions by indicator systems (e.g., Fraser River, Philips River for south coast mainland inlets, Atnarko River for central coast BC, Oregon coastal stocks, and Southeast Alaska stocks). For indicator stock programs, some of the data produced by CWTIP projects will not become available until after the anticipated end of CWTIP funding (Table 5.2). CWTs from augmented CWT releases began being encountered in two-year-old Chinook salmon in fishery and escapement sampling programs in 2011 but all possible marine ages will not be represented until at least 2015 or later (Table 5.2). A more detailed analysis of the impacts of the increased CWT releases will be provided in a future year.

Annual program review by CWTIT provides a means to monitor and evaluate the status of the CWT program. Although not directly attributable to individual projects, the CWTIP program has improved communication and collaboration among agencies. CWTIT workshops have provided opportunities for agency staff involved in all aspects of the CWT program (tagging, monitoring, analysis, data management, etc.) to share information and expertise to improve the CWT system through the exchange of information, discussion of issues, and experience.

*Table 5.2 Year of incremental tag application and anticipated tag recovery by age.*

| **Calendar Year** | **Tag Application** | **Tag Recovery by age** | | | |
|---|---|---|---|---|---|
| | | **2** | **3** | **4** | **5** |
| 2009 | Y | | | | |
| 2010 | Y | Y | | | |
| 2011 | Y | Y | Y | | |
| 2012 | Y | Y | Y | Y | |
| 2013 | Y | Y | Y | Y | Y |
| 2014 | Planned | NA | NA | NA | NA |
| 2015 | | | NA | NA | NA |
| 2016 | | | | NA | NA |
| 2017 | | | | | NA |

*Note*: Y = Yes, NA = Not Available until future return years.

## 5.3 DEVELOPING ISSUES

Although the CWTIP has delivered many positive benefits to the CWT system some issues were identified as the program proceeded.

Timing and availability of funds has hampered some US projects from beginning at the planned date. This is because of delays in receiving funds due to unanticipated complications in completing the grant process for some agencies/entities and federal appropriations and budgeting processes. In some cases, projects which were approved in February did not begin until 9 to 10 months after that time.

Inflation has eroded the buying power of the funding available through the CWTIP due to increases in personnel, transportation, freight, equipment and other costs.

The initial funding commitment of $15 million over a five-year period was substantial and has resulted in many demonstrable improvements but is insufficient to make needed, lasting improvements to the CWT system with Chinook salmon as the focus. Improvements are also needed for coho salmon and in systemic programs that affect multiple species (e.g., estimation, sampling, and reporting of catches and escapements; separation of hatchery and wild components; methods to assess impacts of mass marking; and mark-selective fishing).

The potential for future reductions in funding for CWT projects is a major concern. Management agencies of both Parties are experiencing substantial pressures for fiscal austerity. In the US, a means to provide funding to support continuation of base-level ocean sampling in WA and OR to address budgetary pressures from the loss of Anadromous Fish Act grants has not been addressed to date. Agencies are evaluating alterations to tagging and sampling programs, and major funding agencies like the Bonneville Power Administration are reviewing future commitments for CWT-related efforts.

## 5.4 LONG-TERM ISSUES

CWTs remain the only tool that has been proven capable of providing the information needed for coastwide fishery management and assessment. This is especially true because CWTs provide stock- and age-specific identification without error, i.e., the tag code is from a specific hatchery or wild stock from a specific year class, and CWTs provide the established mechanisms for coastwide data sharing and broadly accepted methods for statistical analysis. Other tools have been used for various management or stock assessment objectives, primarily for region-specific applications. However, these tools do not provide the complete toolbox necessary to implement the PST, and at this point in time there is no convincing promise that they have the capability of delivering a substantially less costly approach.

The CWTIP concluded in 2013/2014 for Canada, and will conclude in 2014/2015 for the US. Many improvements were made in both countries that support the entire coastwide program. A means to continue funding is needed for the improvements to be maintained. Projects such as indicator stock programs, tagging levels, sampling and recovery of tags, and data reporting require sustained commitment of funding and staff resources. Funding from other sources, such as the endowment funds, which could provide funding to support CWT-related improvements, is uncertain due to variability in investment performance and the need to provide funding to support other PSC initiatives, like the Sentinel Stocks Program. **Future funding is required to maintain the CWT program, let alone improve it**. Since 2009 when this program was initiated, core agency monitoring and sampling programs have been reduced. In some cases, CWT improvement funds have been used as a temporary solution to cover emerging gaps in agency resources. The consequences of not adequately funding the CWT program in the future are numerous and include (1) not recovering the CWTs already in circulation, (2) reduced sampling rates and coverage coastwide, (3) reduced tagging levels, and (4) loss of a portion of the base agency ocean sampling in Washington and Oregon.

## 5.5 CANADIAN CWTIT PROJECTS

### 5.5.1 Progress on Canadian Projects Undertaken in 2013

A total of 33 Canadian projects in 10 project categories were funded in FY 2013, representing a total expenditure of $1.5 million (CAD). These projects are presented in summary fashion in Appendix L. Each project summary includes a description of the project, the CWT issue(s) addressed in the PSC CWT Workgroup Tech Report 25 (Table 5.3, PSC 2008), primary objectives, accomplishments, and benefits to the CWT program. This was also the last year of funding for Canadian projects.

*Table 5.3 Key to issues in PSC Technical Report 25.*

| TR 25 Issue No. | Description |
|---|---|
| 1 | Incomplete and inconsistent representation of production regions |
| 2 | Determination of tagging levels |
| 3 | Representation of hatchery production |
| 4 | Low sample rates in terminal fisheries |
| 5 | Low sample rates in escapements |
| 6 | Uncertainty in estimates of escapement or terminal fisheries |
| 7 | Low sample rates in highly mixed stock fisheries |
| 8 | Uncertainty in estimates of catch in high mixed stock fisheries |
| 9 | Non-representative sampling |
| 10 | Incomplete coverage of fisheries or escapement |
| 11 | Voluntary sport fishery sampling programs |
| 12 | Sampling methods to facilitate sampling of mark-selective fisheries and CWT processing |
| 13 | Timeliness of reporting |
| 14 | Incomplete/no exchange of CWT data |
| 15 | Inter/intra-agency coordination |
| 16 | Unclear authority to establish and enforce standards |
| 17 | Updating data is difficult and updates cannot be tracked |
| 18 | Validation is inadequate |
| Chapter 6 | Decision Theoretic Tool |

## 5.6 US CWTIT PROJECTS

### 5.6.1 Progress on US Projects Undertaken in 2013

A total of 12 US projects were funded in FY 2013, representing a total expenditure of $1,500,000 (USD). These projects are presented in summary fashion in Appendix L. Each project summary includes a description of the project, the CWT issue(s) addressed in the PSC CWT Workgroup Tech Report 25 (Table 5.4, PSC 2008), primary objectives, accomplishments, and benefits to the CWT program.

### 5.6.2 US Projects Recommended for 2014

Projects were solicited through a request for proposals released for two months in late 2013. Projects were evaluated by the CWTIT on the basis of those providing the most perceived benefits to the CWT system for the associated cost. Table 5.4 provides a summary of the recommended projects by project category. Project categories are based on the themes specified in PSC Technical Report 25 (PSC 2008). Projects were scored and ranked individually by US CWTIT members and consensus was subsequently reached to develop draft recommendations. These were deliberated by the bilateral CWTIT. The PSC approved the following list of recommendations. The projects recommended by the US represent a complete expenditure of the $1.5 million available under this program for 2014, plus an additional $38,000 that was remaining from previous year's projects. The additional $38,000 allowed the CWTIT to reserve some funds to cover the costs of workshops and meetings. The CWTIT believes that the recommended projects will provide short- and long-term benefits to the CWT system and benefits to abundance-based management of Chinook salmon under jurisdiction of the PST.

*Table 5.4 US CWT Improvement Projects approved for FY 2014.*

| Project Category | TR25 Issue | Project Title | Cost ($USD) |
|---|---|---|---|
| CWTIT Meetings | Various | Costs of CWTIT Workshops/Meeting | $23,000 |
| Low sample rates in mixed-stock fisheries | 7, 8, 12 | Sampling Washington Ocean Salmon Fisheries [1] | $252,912 |
| Low sample rates in mixed-stock fisheries | 7, 8, 12 | Ocean Sampling North of Cape Falcon | $165,289 |
| Replace outdated CWT equipment | 12, 13 | CWT Field Eq. Purchase: Handheld Wand Detectors (41) - NWIFC | $130,708 |
| Low sample rates in mixed-stock fisheries | 7, 8 | SEAK Marine Sport Catch Sampling[1] | $58,266 |
| Indicator hatchery stock tagging, terminal fishery and escapement estimation, and sampling | 1, 3, 4, 6 | Mid-Oregon Coast CWT Recovery, and Escapement of Elk River Fall Chinook[1] | $131,500 |
| Low sample rates in mixed-stock fisheries | 4, 7, 13 | SEAK Commercial Port Sampling Data Loggers | $95,122 |
| Indicator stock tagging of wild stock without hatchery representation | 1, 2 | Stikine River Chinook Smolt CWT – Bilateral[1] | $134,562 |
| Replace outdated CWT equipment | 12, 13 | Replace 60 WDFW Outdated Handheld CWT Wand Detectors | $187,527 |
| Administrative | 19 | Partial Funding for Co-Chair | $19,471 |
| Sampling mixed-stock fisheries and CWT lab equipment purchase and sampling | 7, 10, 13 | Staff Support and Equipment for CWT Lab Makah Tribe | $61,562 |
| Escapement validation for ERA/model stock | 6 | Calibrating Spawning Grounds Surveys in Salmon River to Estimate Escapement | $114,055 |
| Indicator stock tagging of wild stock without hatchery representation | 1, 2 | Chilkat River Chinook Smolt CWT[1] | $89,084 |
| Database reporting system upgrade | 13, 14, 17, 18 | ODFW CWT Database Error Reports, Training, and Documentation | $74, 942 |
|  |  | GRAND TOTAL | $1,538,000 |

[1] Multiyear projects.

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# PACIFIC SALMON COMMISSION
# JOINT CHINOOK TECHNICAL COMMITTEE

## 2014 Exploitation Rate Analysis and Model Calibration
## **Volume Two: Appendix Supplement**

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# APPENDIX A: RELATIONSHIP BETWEEN EXPLOITATION RATE INDICATOR STOCKS, ESCAPEMENT INDICATOR STOCKS, MODEL STOCKS, AND ADDITIONAL MANAGEMENT ACTION STOCKS IDENTIFIED IN THE PACIFIC SALMON TREATY ANNEX

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*Appendix A1. Indicator stocks for Southeast Alaska and Transboundary Rivers.*

| Area | Annex Stock Group[1] | Annex Indicator Stocks | Run Type | Escapement Indicator Stock | Escapement Objective[2] | Model Stock | Escapement Goal in Model[3] | Exploitation Rate Indicator Stock | CWT Acronym |
|---|---|---|---|---|---|---|---|---|---|
| SEAK/TBR | | | Spring | Taku | 19,000–36,000 [4] | | | Taku | TAK |
| | | | | Stikine | 14,000–28,000[4] | | | Stikine | STI |
| | | | | Alsek | 3,500–5,300 | | | NA | |
| Yakutat | | | | Situk | 500–1,000[2] | | | NA | |
| SEAK Northern Inside | | | | Chilkat | 1,750-3,500[4] | | | Chilkat | CHK |
| SEAK Southern Inside | | | | Unuk | 1,800–3,800[4] | Alaska South SE | 9,110 | Alaska Spring (Little Port Walter, Neets Bay Hatchery, Whitman Lake Hatchery, Deer Mountain Hatchery, Crystal Lake Hatchery) | UNU |
| | | | | Chickamin | 450–900[5] | | | | AKS |

*Note*: NA = not available.

[1] SEAK fisheries will be managed to achieve escapement objectives for Southeast Alaska and Transboundary River Chinook salmon stocks.

[2] CTC escapement objective.

[3] Agency objective.

[4] Based on large spawners (age-.3 and older).

[5] Based on index count of large spawners (age-.3 and older).

*Appendix A2. Indicator stocks for Canada.*

| Area | Annex Stock Group | Annex Indicator Stocks | Run Type | Escapement Indicator Stock | Escapement Objective[1] | Model Stock | Escapement Goal in Model[2] | Exploitation Rate Indicator Stock | CWT Acronym |
|---|---|---|---|---|---|---|---|---|---|
| NBC-Area 1 | North/Central British Columbia | Yakoun | Summer | Yakoun | Escapement goal range by stock | North/Central BC | 117,500 | Kitsumkalum | KLM |
| NBC-Area 3 | | Nass | Summer | Nass | | | | | |
| NBC-Area 4 | | Skeena | | Skeena | | | | | |
| CBC-Area 8 | | | Spring/Fall | Rivers Inlet | | | | | |
| CBC-Area 9 | | | Spring | Dean | | | | Atnarko | ATN |
| WCVI | West Coast Vancouver Island Falls | Artlish, Burman, Gold, Kauok, Tahsis, Tashish, Marble | Fall | WCVI Aggregate (Artlish, Burman, Kauok, Tahsis, Tashish, Marble) | Escapement goal range for aggregate | WCVI Natural | 42,734 | Robertson Creek | RBT |
| | | | | | | WCVI Hatchery | 6,472 | | |
| Upper Strait of Georgia | Upper Strait of Georgia | Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish | Summer/Fall | Upper Strait of Georgia (Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish) | Escapement goal range for aggregate | Upper Strait of Georgia | 23,300 | Quinsam | QUI |
| Lower Strait of Georgia | Lower Strait of Georgia | | Summer/Fall | | | Lower Strait of Georgia Hatchery | 5,318 | Puntledge | PPS |
| | | | | | | | | Big Qualicum | BQR |
| | | Cowichan, Nanaimo | Fall | Lower Strait of Georgia (Cowichan/ Nanaimo) | Escapement goal range for aggregate | Lower Strait of Georgia Natural | 21,935 | Cowichan | COW |
| | | | | | | | | Nanaimo | NAN |
| Fraser River | Fraser Early | Upper Fraser<br>Mid Fraser<br>Thompson | Spring | Fraser Spring run age 1.2 | Escapement goal range by stock | Fraser Early | 93,700 | Nicola | NIC |
| | | | | Fraser Spring run age 1.3 | | | | Dome | DOM |
| | | | Summer | Fraser Summer run age 1.3 | | | | NA | NA |
| | | | | Fraser Summer run age 0.3 | | | | Lower Shuswap | SHU |
| | | | | | | | | Middle Shuswap | MSH |
| | Fraser Late | Harrison River | Fall | Harrison River | 75,100–98,500 | Fraser Late | 75,100 | Chilliwack | CHI |
| | | | | | | | | Harrison | HAR |

[1] CTC escapement objective.

[2] Agency objective.

*Appendix A3. Indicator stocks for Puget Sound.*

| Area | Annex Stock Group | Annex Indicator Stocks | Run Type | Escapement Indicator Stock | Escapement Objective[1] | Model Stock | Escapement Goal in Model[2] | Exploitation Rate Indicator Stock | CWT Acronym |
|---|---|---|---|---|---|---|---|---|---|
| North/ Central Puget Sound | North Puget Sound Natural Springs | Nooksack | Spring | Nooksack | Escapement goal range by stock | Nooksack Spring | 4,000 | Nooksack Spring Fingerling<br>Nooksack Spring Yearling | NSF<br>NKS |
| | | Skagit | | Skagit Spring | | | | Skagit Spring Fingerling<br>Skagit Spring Yearling | SKF<br>SKS |
| | Not an Annex stock | | Fall | | | Nooksack Fall | 11,923 | Samish Fall Fingerling | SAM |
| | Puget Sound Natural Summer/Falls | Snohomish | Summer/ Fall | Snohomish | | Snohomish Wild | 5,250 | Skykomish | SKY |
| | | Skagit group | | Skagit Summmer/Fall | | Skagit Wild | 9,778 | Skagit Summer Fingerling | SSF |
| | | Lake Washington | | Lake Washington Falls | | Puget Sound Natural Fingerling | 16,966 | NA | |
| | | Green River | | Green River | | | | Green River Fingerling | GRN |
| | | Stillaguamish | | Stillaguamish | | Stillaguamish Wild | 2,000 | Stillaguamish Fall Fingerling | STL |
| | | | | | | | | Nisqually Fall Fingerling | NIS |
| Hood Canal | Not an Annex stock | | Fall | | | Puget Sound Hatchery Fingerling | | George Adams Fall Fingerling | GAD |
| South Puget Sound | Not an annex stock | | Fall | | | Puget Sound Hatchery Fingerling | 24,769 | South Puget Sound Fall Fingerling | SPS |
| | | | | | | Puget Sound Hatchery Yearling | 9,136 | South Puget Sound Fall Yearling | SPY |
| | | | | | | | | Squaxin Pens Fall Yearling[3] | SQP |
| | | | | | | | | Univ. of Washington Accelerated Fall[3] | UWA |
| | | | Spring | | | | | White River Spring Yearling | WRY |

*Note:* NA = not available.

[1] CTC escapement objective.

[2] Agency objective.

[3] Production and tagging discontinued.

*Appendix A4. Indicator stocks for the Washington Coast.*

| Area | Annex Stock Group | Annex Indicator Stocks | Run Type | Escapement Indicator Stock | Escapement Objective[1] | Model Stock | Escapement Goal in Model[2] | Exploitation Rate Indicator Stock | CWT Acronym |
|---|---|---|---|---|---|---|---|---|---|
| North/ Central Puget Sound | North Puget Sound Natural Springs | Nooksack | Spring | Nooksack | Escapement goal range by stock | Nooksack Spring | 4,000 | Nooksack Spring Fingerling<br>Nooksack Spring Yearling | NSF<br>NKS |
| | | Skagit | | Skagit spring | | | | Skagit Spring Fingerling<br>Skagit Spring Yearling | SKF<br>SKS |
| | Not an Annex stock | | Fall | | | Nooksack Fall | 11,923 | Samish Fall Fingerling | SAM |
| | Puget Sound Natural Summer/Falls | Snohomish | Summer/ Fall | Snohomish | | Snohomish Wild | 5,250 | Skykomish | SKY |
| | | Skagit group | | Skagit Summmer/Fall | | Skagit Wild | 9,778 | Skagit Summer Fingerling | SSF |
| | | Lake Washington | | Lake Washington Falls | | Puget Sound Natural Fingerling | 16,966 | NA | |
| | | Green River | | Green River | | | | Green River Fingerling | GRN[3] |
| | | Stillaguamish | | Stillaguamish | | Stillaguamish Wild | 2,000 | Stillaguamish Fall Fingerling | STL |
| | | | | | | | | Nisqually Fall Fingerling | NIS |
| Hood Canal | Not an Annex stock | | Fall | | | Puget Sound Hatchery Fingerling | | George Adams Fall Fingerling | GAD |
| South Puget Sound | Not an annex stock | | Fall | | | Puget Sound Hatchery Fingerling | 24,769 | South Puget Sound Fall Fingerling | SPS |
| | | | | | | Puget Sound Hatchery Yearling | 9,136 | South Puget Sound Fall Yearling | SPY |
| | | | | | | | | Squaxin Pens Fall Yearling[4] | SQP |
| | | | | | | | | Univ. of Washington Accelerated Fall[3] | UWA |
| | | | Spring | | | | | White River Spring Yearling | WRY |

*Note:* NA = not available.

[1] CTC escapement objective.

[2] Agency objective.

[3] GRN is a subset of SPS CWT aggregate

[4] Production and tagging discontinued.

*Appendix A5. Indicator stocks for Columbia River and Oregon Coast.*

| Area | Annex Stock Group | Annex Indicator Stocks | Run Type | Escapement Indicator Stock | Escapement Objective[1] | Model Stock | Escapement Goal in Model[2] | Exploitation Rate Indicator Stock | CWT Acronym |
|---|---|---|---|---|---|---|---|---|---|
| Columbia River | Not an Annex stock | | Spring | | | Cowlitz Spring Hatchery | 2,500 | NA | CWS |
| | | | | | | Willamette River Hatchery | 13,500 | Willamette Spring | WSH |
| | Columbia River Summers | Mid-Columbia Summers | Summer | Mid-Columbia Summer | 17,857[3] | Columbia River Summer | 17,857 | Columbia Summers | SUM |
| | Columbia River Falls | | Fall | | | Fall Cowlitz Hatchery | 8,800 | Cowlitz Tule | CWF |
| | | | | | | Spring Creek Hatchery | 7,000 | Spring Creek Tule | SPR |
| | | | | | | Lower Bonneville Hatchery | 26,200 | Columbia Lower River Hatchery | LRH |
| | | Upriver Brights | | Columbia Upriver Bright | 45,000 | Columbia Upriver Brights | 40,000 | Columbia Upriver Bright | URB |
| | | | | | | | | Hanford Wild | HAN |
| | | Deschutes | | Deschutes River Fall | 4,532 | Subset of Columbia Upriver Brights | 4,000 | NA | |
| | | | | | | Lyons Ferry | 3,430 | Lyons Ferry | LYF |
| | | | | | | Mid-Columbia River Brights | 12,500 | NA | |
| | | Lewis River | | Lewis | 5,700 | Lewis River Wild | 5,700 | Lewis River Wild | LRW |
| North Oregon Coast | Far North Migrating Oregon Coastal Falls | Nehalem | Fall | Nehalem | 6,989 | Oregon Coast | 62,382 | Salmon River | SRH |
| | | Siuslaw | | Siuslaw | 12,925 | | | | |
| | | Siletz | | Siletz | 2,944 | | | | |
| Mid-Oregon Coast | Not an Annex stock | | Fall | Umpqua | | | | Elk River | ELK |
| | | | | Mid-South Oregon Coastal Falls | | | | | |

*Note*: NA = not available.

[1] CTC escapement objective.

[2] Agency objective.

[3] Measured at Bonneville Dam.

# APPENDIX B: ISBM INDICES

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Appendix B1. ISBM Indices for all British Columbia ISBM fisheries based on CWT-based exploitation rate analysis (1999-2012). The stock groups correspond to Annex 4, Chapter 3, Attachment IV of the 2009 PST Agreement. .......... 8

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Appendix B4. ISBM Indices for all southern US fisheries, from the Chinook model (1999-2014) used to establish the AI for each year. The stock groups correspond to Annex 4, Chapter 3, Attachment V of the 2009 PST Agreement. .......... 11

*Appendix B1. ISBM Indices for all British Columbia ISBM fisheries based on CWT-based exploitation rate analysis (1999-2012). The stock groups correspond to Annex 4, Chapter 3, Attachment IV of the 2009 PST Agreement.*

| Stock Group | Escapement Indicator Stocks | CWT Indices[1] | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| Lower Strait of Georgia | Cowichan | 0.517 | 0.196 | 0.260 | 0.247 | 0.363[2] | 0.284 | 0.132 | 0.191 | 0.043 | 0.242 | 0.400 | 0.261 | 0.147 | 0.262 |
| | Nanaimo[3] | 0.163 | 0.154 | 0.260 | 0.247 | NA[4] | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fraser Late | Harrison River[5] | 0.112 | 0.073 | 0.090 | 0.105 | 0.055[6] | 0.032 | 0.058 | 0.032 | 0.035 | 0.031 | 0.058 | 0.134 | 0.092 | 0.141 |
| North Puget Sound Natural Springs | Nooksack | 0.183 | 1.176 | 0.040 | 0.023 | 0.046 | NA | NA | NA | NA | NA | 0.106 | 0.014 | 0.144[7] | 0.137 |
| | Skagit | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Upper Strait of Georgia | Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish | 0.021 | 0.123 | 0.040 | 0.063 | 0.006 | 0.018 | 0.028 | 0.079 | 0.268 | 0.073 | 0.247 | 0.182 | 0.032 | 0.175 |
| Fraser Early (Spring and Summers) | Upper Fraser, Mid Fraser, Thompson | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| West Coast Vancouver Island Falls | WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble) | 0.431 | 0.083 | 0.060 | 0.248 | 0.496[8] | 0.488 | 0.267 | 0.267 | 0.906 | 0.652 | 0.464 | 0.178 | 0.65 | 1.017 |
| Puget Sound Natural Summer/Falls | Skagit | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Stillaguamish | 0.194 | 0.111 | 0.145 | NA | NA | 0.027 | 0.057 | 0.074 | 0.192 | NA | 0.252 | 0.083 | 0.246 | 0.158 |
| | Snohomish | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Lake Washington | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Green River | 0.171 | 0.154 | 0.350 | 0.323 | 0.328 | 0.162 | 0.085 | 0.109 | 0.076 | 0.106 | 0.208 | 0.151 | 0.3 | 0.346 |
| North/Central BC | Yakoun, Nass, Skeena, Area 8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

*Note*: NA means not available because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc.).

[1] The CWT-based estimates, not the model estimates, are to be used in postseason assessments.

[2] An inconsistency was discovered between the approaches used to calculate the model-based and CWT-based indices. The former included harvest rates for terminal sport while the latter did not. Terminal sport harvest rates are now included in the calculation of both indices starting 2003. Further review is yet required to determine whether the base period terminal sport harvest rates obtained from analyses of Big Qualicum CWT recoveries adequately represent impacts that would have occurred on Cowichan Chinook salmon.

[3] Indices for the Nanaimo stock are calculated from CWT recoveries for Cowichan; differences between Nanaimo and Cowichan stock indices are due to differences in terminal harvest.

[4] Several problems have been identified in the approach previously used to calculate the CWT-based indices for Nanaimo Chinook salmon; indices for this stock will not be reported starting 2003 as their utility is questionable.

[5] Stock or stock group with an agreed CTC escapement goal.

[6] The terminal sport harvest rates for Chilliwack Hatchery Chinook salmon, the indicator stock, were removed from the calculation for the Harrison River naturals starting 2003 because sport harvest has been essentially zero on the natural population.

[7] An error was detected in the Nooksack ISBM index estimate for 2011 as reported in TCChinook (14)-01; the corrected value appears here.

[8] A review of the approach used to calculate both the CWT-based and model data-based indices for the WCVI naturals was carried out in 2008. A similar approach was adopted for both indices but due to modifications to the formerly used procedures, the historical time series of values was updated starting 2003.

*Appendix B2. ISBM Indices for all southern US fisheries based on CWT-based exploitation rate analysis (1999-2012). The stock groups correspond to Annex 4, Chapter 3, and Attachment V of the 2009 PST Agreement.*

| Stock Group | Escapement Indicator Stocks | CWT Indices[1] | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| Washington Coastal Fall Naturals | Hoko | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Grays Harbor | 0.430 | 1.630 | 0.860 | 0.540 | 0.150 | 0.530 | 0.560 | 0.520 | 0.790 | 0.390 | 0.700 | 0.690 | 0.923 | 0.591 |
| | Queets | 1.000 | 0.850 | 1.440 | 0.840 | 0.850 | 0.840 | 2.050 | 0.600 | 1.050 | 0.610 | 0.450 | 0.670 | NA | 0.951 |
| | Hoh | 1.540 | 2.750 | 1.660 | 0.950 | 1.340 | 1.220 | 1.030 | 1.290 | 2.230 | 0.950 | 1.220 | 1.000 | 2.003 | 1.593 |
| | Quillayute | 1.300 | 2.470 | 1.480 | 1.420 | 0.990 | 1.150 | 1.030 | 1.180 | 1.470 | 1.160 | 1.970 | 0.670 | NA | 2.14 |
| Columbia River Falls | Upriver Brights | 1.370 | 2.530 | 1.350 | 1.320 | 1.430 | 1.740 | 1.780 | 3.080 | 3.100 | 1.830 | 2.790 | 1.750 | 2.862 | 3.133 |
| | Deschutes | 0.510 | 0.710 | 0.520 | 0.590 | 0.049 | 0.510 | 0.670 | 0.580 | 0.510 | 1.860 | 2.360 | 0.790 | 0.798 | 1.045 |
| | Lewis[2] | 0.000 | 0.360 | 0.580 | 0.560 | 1.030 | 0.170 | 0.980 | 1.330 | 0.790 | 0.630 | 0.140 | 0.430 | 0.432 | 0.835 |
| Puget Sound Natural Summer/Falls | Skagit | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Stillaguamish | 0.120 | 0.040 | 0.890 | NA | NA | 0.010 | 0.220 | 0.080 | 0.120 | NA[2] | 0.200 | 0.380 | 0.195 | 0.213 |
| | Snohomish | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Lake Washington | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | Green River | 0.500 | 0.700 | 1.180 | 1.070 | 1.030 | 1.010 | 0.170 | 0.370 | 0.380 | 0.280 | 0.290 | 0.340 | 0.439 | 0.544 |
| Fraser Late | Harrison River[2] | 0.470 | 0.130 | 0.310 | 0.410 | 0.640 | 0.320 | NA | NA | NA | NA | NA | NA | NA | 0.405 |
| Columbia River Summers | Mid-Columbia Summers[2] | 1.640 | 4.820 | 5.320 | 7.250 | 10.040 | 2.690 | 6.080 | 0.480 | 1.840 | 6.800 | 1.310 | 9.810 | 5.376 | 5.192 |
| Far North Migrating OR Coastal Falls | Nehalem[2] | 1.960 | 1.970 | 1.940 | 2.170 | 3.110 | 1.800 | 2.000 | 3.480 | 2.010 | 0.920 | 0.590 | 1.210 | 1.210 | 2.267 |
| | Siletz[2] | 0.820 | 1.160 | 1.190 | 1.310 | 1.590 | 2.290 | 1.190 | 2.340 | 1.600 | 0.670 | 0.730 | 0.500 | 1.068 | 0.997 |
| | Siuslaw[2] | 1.220 | 2.450 | 2.180 | 2.560 | 3.820 | 1.030 | 1.630 | 2.230 | 1.000 | 0.640 | 1.070 | 0.770 | 1.108 | 1.603 |
| North Puget Sound Natural Springs | Nooksack | 0.440 | 0.000 | 0.040 | NA | NA | NA | NA | NA | NA | 0.210 | 0.520 | 0.700 | 0.795[3] | 2.758 |
| | Skagit | NA | NA | NA | 1.120 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

*Note*: NA means not available because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc.).

[1] The CWT-based estimates, not the model estimates, are to be used in postseason assessments.

[2] Stock or stock group with an agreed CTC escapement goal.

[3] An error was detected in the Nooksack ISBM index estimate for 2011 as reported in TCChinook (14)-01; the corrected value appears here.

*Appendix B3. ISBM Indices for all British Columbia fisheries, from the Chinook model (1999-2014) used to establish the AI for each year. The stock groups correspond to Annex 4, Chapter 3, Attachment IV of the 2009 PST Agreement.*

| Stock Group | Escapement Indicator Stocks | Model Indices | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **1999 CLB 0107** | **2000 CLB 0107** | **2001 CLB 0107** | **2002 CLB 0206** | **2003 CLB 0308** | **2004 CLB 0404** | **2005 CLB 0506** | **2006 CLB 0604** | **2007 CLB 0705** | **2008 CLB 0807** | **2009 CLB 0907** | **2010 CLB 1007** | **2011 CLB 1106** | **2012 CLB 1209** | **2013 CLB 1308** | **2014 CLB 1402** |
| Lower Strait of Georgia | Cowichan | 0.304 | 0.232 | 0.325 | 0.541 | 0.490 | 0.593 | 0.381[2] | 0.590 | 0.240 | 0.315 | 0.494 | 0.203 | 0.367 | 0.443 | 0.362 | 0.307 |
| | Nanaimo[1] | 0.209 | 0.113 | 0.246 | 0.190 | 0.498 | 0.695 | | | | | | | | | | |
| Fraser Late | Harrison River[3] | 0.309 | 0.198 | 0.336 | 0.302 | 0.352 | 0.719 | 0.332 | 0.294 | 0.211 | 0.208 | 0.245 | 0.138 | 0.193 | 0.256 | 0.286 | 0.252 |
| North Puget Sound Natural Springs | Nooksack, Skagit | 0.233 | 0.156 | 0.241 | 0.195 | 0.251 | 0.273 | 0.314 | 0.993 | 0.563 | 0.470 | 0.988 | 0.568 | 0.732 | 0.339 | 0.273 | 0.197 |
| | | NA | NA | NA | NA | 0.251 | 0.273 | 0.314 | 0.993 | 0.563 | 0.470 | 0.988 | 0.568 | 0.731 | 0.340 | 0.273 | 0.197 |
| Upper Strait of Georgia | Klinaklini, Kakweikan, Wakeman, Kingcome, Nimpkish | 0.174 | 0.118 | 0.314 | 0.272 | 0.649 | 0.971 | 0.649 | 0.584 | 0.146 | 0.622 | 0.128 | 0.122 | 0.578 | 0.596 | 0.649 | 0.598 |
| Fraser Early (Spring and Summers) | Upper Fraser, Mid Fraser, Thompson | 0.125 | 0.124 | 0.210 | 0.145 | 0.661 | 0.718 | 0.654 | 0.610 | 0.159 | 0.128 | 0.094 | 0.121 | 0.222 | 0.226 | 0.238 | 0.213 |
| West Coast Vancouver Island Falls | WCVI (Artlish, Burman, Kauok, Tahsis, Tashish, Marble) | 0.365 | 0.327 | 0.244 | 0.342 | 0.744 | 0.927 | 0.728 | 1.082 | 0.133 | 1.490 | 0.137 | 0.122 | 0.491 | 0.636 | 0.227 | 0.639 |
| Puget Sound Natural Summer/Falls | Skagit | 0.197 | 0.119 | 0.217 | 0.172 | 0.436 | 0.438 | 0.465 | 1.092 | 0.718 | 0.724 | 1.097 | 0.709 | 0.745 | 1.421 | 0.429 | 0.368 |
| | Stillaguamish | 0.355 | 0.234 | 0.469 | 0.375 | 0. 513 | 0.567 | 0.587 | 1.166 | 0.821 | 0.796 | 1.123 | 0.791 | 0.793 | 1.329 | 0.561 | 0.462 |
| | Snohomish | 0.185 | 0.116 | 0.222 | 0.176 | 0.435 | 0.445 | 0.457 | 1.101 | 0.736 | 0.721 | 1.098 | 0.718 | 0.744 | 1.359 | 0.423 | 0.367 |
| | Lake Washington | 0.332 | 0.202 | 0.355 | 0.275 | 0.508 | 0.446 | 0.497[4] | 0.898 | 0.735 | 0.722 | 0.918 | 0.690 | 0.752 | 0.991 | 0.419[4] | 0.337 |
| | Green River | 0.333 | 0.202 | 0.356 | 0.275 | 0.508 | 0.466 | 0.497[4] | 0.914 | 0.752 | 0.721 | 0.919 | 0.670 | 0.756 | 1.000 | 0.419[4] | 0.337 |
| North/Central BC | Yakoun, Nass, Skeena, Area 8 | 0.237 | 0.254 | 0.613 | 0.584 | 0.689 | 0.804 | 0.680 | 0.626 | 0.202 | 0.593 | 0.224 | 0.177 | 0.598 | 0.536 | 0.496 | 0.502 |

*Note*: NA means not available because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc.).

[1] Indices for the Nanaimo stock are calculated from CWT recoveries for Cowichan; differences between Nanaimo and Cowichan stock indices are due to differences in terminal harvest.

[2] Although model-based indices were previously calculated separately for Cowichan and Nanaimo Chinook salmon; these did not adequately represent impacts on either LGS stock. This is because the model-based data represent an aggregate of the 2 stocks and methods do not currently exist to correctly disaggregate these data for calculation of the ISBM values. Until such methods are developed, a single index value only will be reported representing the aggregate starting 2007.

[3] Stock or stock group with an agreed CTC escapement goal.

[4] For the Canadian ISBM fisheries, both Lake Washington and Green are assumed to have the same distribution and thus the same index value.

*Appendix B4. ISBM Indices for all southern US fisheries, from the Chinook model (1999-2014) used to establish the AI for each year. The stock groups correspond to Annex 4, Chapter 3, Attachment V of the 2009 PST Agreement.*

| Stock Group | Escapement Indicator Stocks | Model Indices | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1999 CLB 0107 | 2000 CLB 0107 | 2001 CLB 0107 | 2002 CLB 0206 | 2003 CLB 0308 | 2004 CLB 0404 | 2005 CLB 0506 | 2006 CLB 0604 | 2007 CLB 0705 | 2008 CLB 0807 | 2009 CLB 0907 | 2010 CLB 1007 | 2011 CLB 1106 | 2012 CLB 1209 | 2013 CLB 1308 | 2014 CLB 1402 |
| Washington Coastal Fall Naturals | Hoko | 0.39 | 0.34 | 0.56 | 0.48 | 0.682 | 0.966 | 0.444 | 0.442 | 0.401 | 0.305 | 0.284 | 0.130 | 0.419 | 0.378 | 0.608 | 0.395 |
| | Grays Harbor | 0.440 | 0.430 | 0.450 | 0.840 | 0.494 | 0.573 | 0.222 | 0.544 | 0.504 | 0.45 | 0.404 | 0.382 | 0.549 | 0.604 | 0.547 | 0.477 |
| | Queets | 0.880 | 0.420 | 0.440 | 1.050 | 1.063 | 0.932 | 1.023 | 1.022 | 1.014 | 1.007 | 0.508 | 0.285 | 0.327 | 0.179 | 0.532 | 0.227 |
| | Hoh | 1.390 | 0.730 | 0.760 | 1.260 | 1.208 | 1.214 | 1.499 | 1.493 | 1.111 | 1.457 | 0.981 | 0.987 | 0.760 | 0.443 | 0.802 | 1.251 |
| | Quillayute | 1.140 | 0.720 | 0.750 | 1.310 | 1.292 | 1.139 | 1.133 | 0.673 | 0.883 | 0.851 | 0.881 | 0.963 | 1.058 | 1.151 | 1.442 | 1.149 |
| Columbia River Falls | Upriver Brights | 1.020 | 1.090 | 0.990 | 0.910 | 1.022 | 0.906 | 0.734 | 0.814 | 0.726 | 0.701 | 0.798 | 0.801 | 0.841 | 0.894 | 0.971 | 0.914 |
| | Deschutes | 1.020 | 0.880 | 0.740 | 0.550 | 0.561 | 0.475 | 0.483 | 0.437 | 0.493 | 0.428 | 0.461 | 1.004 | 1.044 | 0.684 | 0.718 | 0.696 |
| | Lewis[1] | 0.110 | 0.160 | 1.700 | 0.930 | 0.851 | 1.008 | 1.058 | 1.861 | 1.466 | 0.436 | 0.470 | 0.505 | 0.426 | 0.442 | 0.538 | 0.527 |
| Puget Sound Natural Summer/Falls | Skagit | 0.170 | 0.210 | 0.780 | 0.270 | 0.406 | 0.157 | 0.195 | 0.258 | 0.325 | 0.321 | 0.292 | 0.261 | 0.789 | 0.327 | 1.015 | 0.718 |
| | Stillaguamish | 0.140 | 0.140 | 0.400 | 0.200 | 0.184 | 0.224 | 0.185 | 0.493 | 0.152 | 0.137 | 0.446 | 0.117 | 0.169 | 1.054 | 0.213 | 0.131 |
| | Snohomish | 0.040 | 0.050 | 0.600 | 0.150 | 0.072 | 0.110 | 0.891 | 0.199 | 0.138 | 0.165 | 0.202 | 0.125 | 0.211 | 0.332 | 0.231 | 0.192 |
| | Lake Washington | 0.500 | 0.480 | 0.590 | 1.250 | 0.768 | 0.411 | 0.373 | 0.613 | 0.391 | 0.392 | 0.768 | 0.517 | 0.387 | 0.590 | 0.404 | 0.466 |
| | Green River | 0.500 | 0.480 | 0.600 | 0.350 | 0.263 | 0.260 | 0.202 | 0.361 | 0.278 | 0.380 | 0.555 | 0.520 | 0.236 | 0.631 | 0.331 | 0.251 |
| Fraser Late | Harrison River[1] | 0.660 | 0.390 | 0.620 | 0.720 | 0.981 | 1.058 | 0.670 | 0.787 | 0.563 | 0.378 | 0.410 | 0.209 | 0.497 | 0.448 | 0.887 | 0.528 |
| Columbia River Summers | Mid-Columbia Summers[1] | 0.110 | 0.090 | 0.140 | 0.820 | 0.794 | 0.715 | 0.545 | 0.696 | 0.943 | 1.254 | 1.236 | 1.142 | 1.398 | 1.369 | 1.571 | 1.463 |
| Far North Migrating OR Coastal Falls | Nehalem[1] | 2.670 | 2.660 | 2.750 | 2.610 | 2.346 | 2.230 | 2.090 | 1.912 | 2.183 | 1.968 | 2.003 | 0.916 | 2.146 | 1.696 | 1.475 | 1.436 |
| | Siletz[1] | 1.810 | 1.790 | 1.870 | 1.330 | 1.302 | 1.288 | 1.233 | 1.237 | 1.399 | 1.592 | 1.217 | 0.698 | 0.643 | 0.814 | 0.679 | 0.717 |
| | Siuslaw[1] | 0.940 | 0.930 | 0.950 | 3.340 | 2.856 | 2.816 | 2.643 | 1.095 | 1.241 | 0.971 | 1.632 | 2.028 | 1.427 | 1.646 | 1.443 | 1.393 |
| North Puget Sound Natural Springs | Nooksack | 0.150 | 0.200 | 0.010 | 0.000 | 0.121 | 0.974 | 0.222 | 0.121 | NA | NA | 0.107 | 0.181 | 0.484 | 0.171 | 0.330 | 0.274 |
| | Skagit | NA | NA | 0.070 | 0.060 | 0.119 | 0.663 | 0.213 | 0.161 | NA | NA | 0.143 | 0.245 | 0.271 | 0.147 | 0.337 | 0.357 |

*Note*: NA means not available because of insufficient data (lack of stock specific tag codes, base period CWT recoveries, etc.).

[1] Stock or stock group with an agreed CTC escapement goal.

# APPENDIX C: PERCENT DISTRIBUTION OF LANDED CATCH AND TOTAL MORTALITY AMONG FISHERIES AND ESCAPEMENT FOR EXPLOITATION RATE INDICATOR STOCKS BY CALENDAR YEAR WITH ANALOGOUS MODEL STOCKS LISTED IN PARENTHESES

Landed catch distribution tables are available from the PSC office upon request.

These data result from cohort analysis of CWT recoveries for the indicator stocks; data within a row for each calendar year sum to 100%. Total mortality includes landed catch and incidental (i.e., release mortality) which occurs in both retention and nonretention fisheries due to fatal contact with gear. Landed catch is from direct observation programs and incidental mortalities are estimated based on sampling data and/or internal algorithms (i.e., size-at-age vulnerability algorithms and gear-specific mortality rates). Data are not reported for a particular calendar year if there are less than 3 age classes present in the calendar year or if there are less than 10 estimated CWTs in the reported catch and escapement. Where relevant, the escapement portion of the distribution includes mortalities resulting from interdam loss. Escapement data is footnoted when it's missing or partially enumerated. Note there are substantive differences in this year's distribution tables as compared those previously reported; differences are due to changes in the 1) CWT database, 2) inclusion of a terminal troll fishery, 3) inclusion of a terminal stray category, 4) inclusion of additional CWT indicator stocks, 5) elimination of incorrectly assigned tag codes, and 6) fishery mappings. Changes to fishery mappings entails grouping stock-specific terminal fishery impacts in marine areas with the nonstock-specific preterminal fishery (e.g., time- and location-based Georgia Strait sport fishery impacts on maturing Big Qualicum River Fall Chinook are reported along with impacts on immature fish in one total under Georgia Strait Sport rather separated under Georgia Strait Sport and Terminal Sport).

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*Appendix C1. Percent distribution of Alaska Spring (Alaska South SE) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | 264 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 2086 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 1128 | 3,4,5 | 44.8% | 3.3% | 10.4% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.0% | 0.0% | 0.7% | 0.0% | 31.1% |
| 1982 | 3060 | 3,4,5,6 | 27.0% | 5.2% | 5.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.7% | 0.0% | 0.5% | 0.2% | 56.7% |
| 1983 | 6569 | 3,4,5,6 | 33.8% | 1.2% | 8.3% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.2% | 0.0% | 0.0% | 0.3% | 51.1% |
| 1984 | 12158 | 3,4,5,6 | 27.3% | 2.5% | 16.3% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 0.3% | 0.1% | 50.5% |
| 1985 | 19157 | 3,4,5,6 | 28.3% | 9.9% | 13.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.8% | 0.4% | 45.2% |
| 1986 | 19753 | 3,4,5,6 | 26.5% | 11.9% | 12.4% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.6% | 0.0% | 0.0% | 0.2% | 44.6% |
| 1987 | 18839 | 3,4,5,6 | 33.9% | 5.0% | 7.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.1% | 0.0% | 0.0% | 0.3% | 45.8% |
| 1988 | 17231 | 3,4,5,6 | 31.5% | 4.8% | 10.1% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.7% | 0.0% | 0.4% | 0.3% | 44.7% |
| 1989 | 14340 | 3,4,5,6 | 23.3% | 15.1% | 9.5% | 0.6% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.2% | 4.3% | 0.0% | 0.8% | 41.0% |
| 1990 | 17331 | 3,4,5,6 | 36.7% | 6.3% | 9.3% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.0% | 0.0% | 0.8% | 0.5% | 34.3% |
| 1991 | 15957 | 3,4,5,6 | 37.2% | 6.3% | 10.1% | 0.6% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.1% | 0.0% | 0.0% | 0.6% | 33.6% |
| 1992 | 10248 | 3,4,5,6 | 18.9% | 32.0% | 8.8% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.3% | 0.1% | 0.0% | 1.4% | 29.9% |
| 1993 | 6801 | 3,4,5,6 | 21.5% | 7.3% | 12.4% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.2% | 2.2% | 0.0% | 2.0% | 45.9% |
| 1994 | 8338 | 3,4,5,6 | 14.6% | 34.6% | 10.3% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 2.7% | 0.0% | 1.1% | 33.1% |
| 1995 | 6960 | 3,4,5,6 | 28.4% | 7.8% | 12.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.9% | 8.9% | 0.1% | 2.0% | 33.0% |
| 1996 | 6853 | 3,4,5,6 | 24.4% | 6.0% | 15.7% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.6% | 5.0% | 0.0% | 1.6% | 32.3% |
| 1997 | 6080 | 3,4,5,6 | 24.8% | 5.5% | 14.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.5% | 3.8% | 0.0% | 0.5% | 32.8% |
| 1998 | 4287 | 3,4,5,6 | 25.6% | 10.3% | 14.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.0% | 3.5% | 1.4% | 1.1% | 29.8% |
| 1999 | 6662 | 3,4,5,6 | 20.9% | 3.2% | 17.1% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.1% | 3.1% | 2.6% | 0.9% | 40.3% |
| 2000 | 7208 | 3,4,5,6 | 23.6% | 4.0% | 13.5% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.2% | 2.7% | 3.6% | 0.4% | 43.5% |
| 2001 | 7294 | 3,4,5,6 | 17.5% | 2.6% | 5.5% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.5% | 1.9% | 5.4% | 0.2% | 58.0% |
| 2002 | 6391 | 3,4,5,6 | 13.1% | 2.4% | 5.4% | 1.1% | 0.7% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.2% | 2.4% | 5.9% | 0.2% | 62.2% |
| 2003 | 6280 | 3,4,5,6 | 17.7% | 2.1% | 5.7% | 0.8% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.9% | 0.0% | 4.5% | 0.4% | 58.6% |
| 2004 | 9081 | 3,4,5,6 | 18.2% | 7.0% | 4.2% | 0.5% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.5% | 0.5% | 3.3% | 0.5% | 56.6% |
| 2005 | 9186 | 3,4,5,6 | 26.5% | 7.2% | 8.9% | 0.4% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 19.4% | 0.1% | 3.6% | 0.1% | 33.1% |
| 2006 | 11510 | 3,4,5,6 | 35.1% | 4.7% | 5.1% | 0.7% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.3% | 2.2% | 2.0% | 0.6% | 40.1% |
| 2007 | 11455 | 3,4,5,6 | 31.2% | 7.1% | 5.6% | 0.2% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.5% | 1.3% | 1.2% | 0.8% | 42.8% |
| 2008 | 10494 | 3,4,5,6 | 21.2% | 4.7% | 2.6% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.1% | 1.2% | 1.7% | 0.2% | 53.8% |
| 2009 | 8193 | 3,4,5,6 | 17.3% | 4.7% | 2.5% | 0.5% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.1% | 6.1% | 1.8% | 1.1% | 57.7% |
| 2010 | 6173 | 3,4,5,6 | 18.3% | 5.6% | 7.2% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.8% | 1.6% | 1.5% | 1.0% | 55.6% |
| 2011 | 6413 | 3,4,5,6 | 13.2% | 9.1% | 3.7% | 0.4% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.5% | 3.1% | 1.6% | 0.7% | 56.0% |
| 2012 | 4425 | 3,4,5,6 | 25.3% | 11.7% | 3.8% | 0.4% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.9% | 15.1% | 0.9% | 1.9% | 25.3% |
| 2013 | 6408 | 3,4,5,6 | 15.4% | 14.9% | 2.2% | 0.2% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.5% | 13.0% | 0.8% | 2.9% | 38.6% |
| 1979-2013 | 9463 | | 24.9% | 8.1% | 8.9% | 0.5% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.8% | 2.6% | 1.4% | 0.8% | 43.6% |
| 1979-1984 | 5729 | | 33.2% | 3.0% | 10.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.4% | 0.0% | 0.4% | 0.2% | 47.4% |
| 1985-1995 | 14087 | | 27.3% | 12.8% | 10.4% | 0.7% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.5% | 1.7% | 0.2% | 0.9% | 39.2% |
| 1996-1998 | 5740 | | 24.9% | 7.3% | 14.8% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.0% | 4.1% | 0.5% | 1.1% | 31.6% |
| 1999-2013 | 7812 | | 21.0% | 6.1% | 6.2% | 0.4% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.5% | 3.6% | 2.7% | 0.8% | 48.1% |

*Appendix C2. Percent distribution of Atnarko River (North/Central BC) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 5 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 36 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | 145 | 2,3,4 | 20.7% | 3.4% | 0.0% | 2.1% | 0.7% | 0.7% | 0.0% | 0.0% | 0.0% | 4.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.2% | 0.0% | 0.0% | 50.3% |
| 1991 | 772 | 2,3,4,5 | 7.5% | 0.1% | 0.0% | 1.7% | 1.3% | 0.5% | 0.0% | 0.0% | 0.0% | 1.0% | 0.3% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 23.1% | 3.5% | 0.0% | 60.4% |
| 1992 | 984 | 2,3,4,5,6 | 8.9% | 0.0% | 0.0% | 1.8% | 1.8% | 0.3% | 0.0% | 0.0% | 0.0% | 5.3% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 21.8% | 2.2% | 0.0% | 56.2% |
| 1993 | 1357 | 2,3,4,5,6 | 10.4% | 0.4% | 0.6% | 4.5% | 2.1% | 0.4% | 0.0% | 0.0% | 0.0% | 1.2% | 0.1% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.1% | 2.6% | 0.3% | 61.2% |
| 1994 | 1701 | 2,3,4,5,6 | 7.8% | 0.2% | 0.2% | 1.5% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 0.1% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.0% | 0.8% | 0.0% | 64.5% |
| 1995 | 2340 | 2,3,4,5,6 | 4.6% | 0.1% | 1.2% | 1.1% | 2.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.3% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.1% | 3.5% | 0.0% | 65.4% |
| 1996 | 2057 | 2,3,4,5,6 | 2.6% | 0.0% | 0.5% | 0.2% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.8% | 5.8% | 0.0% | 72.3% |
| 1997 | 1170 | 2,3,4,5,6 | 4.5% | 0.0% | 1.5% | 0.2% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.9% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.8% | 4.4% | 0.0% | 67.5% |
| 1998 | 1061 | 2,3,4,5,6 | 7.4% | 0.0% | 0.4% | 0.0% | 4.9% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 23.4% | 3.4% | 0.0% | 59.2% |
| 1999 | 1444 | 2,3,4,5,6 | 5.7% | 0.0% | 2.6% | 0.0% | 2.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.2% | 3.8% | 0.0% | 72.4% |
| 2000 | 1045 | 2,3,4,5,6 | 6.4% | 0.1% | 0.0% | 0.0% | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.0% | 4.1% | 0.0% | 70.8% |
| 2001 | 679 | 2,3,4,5,6 | 6.8% | 0.0% | 1.6% | 0.0% | 2.2% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.8% | 4.1% | 0.0% | 62.2% |
| 2002 | 743 | 2,3,4,5,6 | 5.0% | 0.1% | 0.5% | 9.0% | 4.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 23.0% | 3.9% | 0.0% | 53.3% |
| 2003 | 636 | 2,3,4,5,6 | 4.9% | 0.2% | 0.0% | 2.8% | 5.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 31.0% | 2.4% | 1.4% | 41.7% |
| 2004 | 684 | 2,3,4,5,6 | 10.4% | 0.0% | 0.0% | 3.5% | 5.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 29.1% | 5.0% | 0.0% | 44.7% |
| 2005 | 933 | 3,4,5,6 | 13.1% | 0.1% | 0.8% | 4.5% | 6.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 22.8% | 4.1% | 0.1% | 40.9% |
| 2006 | 1423 | 4,5,6 | 8.6% | 0.0% | 1.1% | 2.2% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.2% | 2.5% | 0.0% | 64.9% |
| 2007 | 407 | 2,5,6 | 11.8% | 0.0% | 2.2% | 1.2% | 3.7% | 0.5% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 22.6% | 5.4% | 0.0% | 50.4% |
| 2008 | 153 | 2,3,6 | 7.2% | 0.0% | 0.7% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.7% | 0.0% | 0.0% | 74.5% |
| 2009 | 684 | 2,3,4 | 9.5% | 0.0% | 0.0% | 3.2% | 3.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 32.2% | 4.4% | 0.0% | 45.6% |
| 2010 | 822 | 2,3,4,5 | 10.9% | 0.1% | 0.6% | 3.0% | 1.7% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 6.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 24.2% | 1.9% | 0.0% | 50.7% |
| 2011 | 574 | 2,3,4,5,6 | 13.2% | 0.0% | 0.5% | 8.0% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 28.7% | 3.5% | 0.0% | 36.2% |
| 2012 | 835 | 2,3,4,5,6 | 10.8% | 0.5% | 0.4% | 1.9% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 30.7% | 0.0% | 0.4% | 51.5% |
| 2013 | 2937 | 3,4,5,6 | 2.6% | 0.2% | 0.2% | 1.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.5% | 5.4% | 0.1% | 69.5% |
| 1979-2013 | 1066 | | 8.4% | 0.2% | 0.6% | 2.3% | 2.8% | 0.1% | 0.0% | 0.0% | 0.0% | 0.7% | 0.1% | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.3% | 3.2% | 0.1% | 57.8% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 1216 | | 10.0% | 0.7% | 0.3% | 2.1% | 1.7% | 0.3% | 0.0% | 0.0% | 0.0% | 2.5% | 0.1% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 19.6% | 2.1% | 0.0% | 59.7% |
| 1996-1998 | 1429 | | 4.9% | 0.0% | 0.8% | 0.1% | 2.9% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.3% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 19.0% | 4.5% | 0.0% | 66.3% |
| 1999-2013 | 933 | | 8.5% | 0.1% | 0.7% | 2.8% | 3.1% | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 3.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 22.5% | 3.4% | 0.1% | 55.3% |

*Appendix C3. Percent distribution of Big Qualicum River Fall (Lower Strait of Georgia Hatchery and Natural) total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 5090 | 2,3,4,5 | 4.4% | 0.7% | 0.4% | 1.9% | 0.0% | 2.5% | 0.1% | 20.9% | 18.2% | 10.5% | 11.9% | 0.1% | 0.0% | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 27.9% |
| 1980 | 2925 | 2,3,4,5 | 1.6% | 1.8% | 0.4% | 4.6% | 0.0% | 4.6% | 0.0% | 15.2% | 24.9% | 7.1% | 12.8% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.3% | 0.2% | 0.0% | 0.1% | 0.0% | 0.0% | 25.9% |
| 1981 | 1539 | 2,3,4,5 | 2.3% | 0.1% | 0.5% | 1.4% | 0.0% | 1.6% | 0.3% | 17.5% | 37.9% | 12.3% | 14.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 11.2% |
| 1982 | 791 | 2,3,4,5 | 5.6% | 0.8% | 1.3% | 4.7% | 0.0% | 4.6% | 0.0% | 12.5% | 13.1% | 6.1% | 20.4% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.8% | 0.0% | 0.0% | 0.0% | 0.1% | 28.8% |
| 1983 | 696 | 2,3,4,5 | 5.5% | 0.3% | 0.9% | 5.0% | 0.0% | 1.1% | 0.0% | 14.5% | 24.1% | 7.2% | 18.7% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.4% |
| 1984 | 556 | 2,3,4,5 | 2.2% | 0.4% | 0.0% | 1.4% | 0.0% | 1.6% | 0.0% | 9.0% | 48.9% | 7.0% | 9.9% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.5% |
| 1985 | 821 | 2,3,4,5 | 6.7% | 1.3% | 0.0% | 2.1% | 0.0% | 1.6% | 0.0% | 2.3% | 34.5% | 4.3% | 18.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 3.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.2% | 24.7% |
| 1986 | 1346 | 2,3,4,5 | 3.0% | 0.4% | 0.0% | 0.7% | 0.0% | 1.4% | 0.0% | 10.0% | 36.7% | 13.6% | 14.7% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 18.0% |
| 1987 | 797 | 2,3,4,5 | 10.0% | 0.0% | 0.9% | 4.3% | 0.0% | 4.6% | 0.0% | 2.1% | 32.4% | 2.8% | 7.5% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 33.9% |
| 1988 | 551 | 2,3,4,5 | 2.4% | 1.8% | 0.0% | 2.2% | 0.0% | 2.7% | 1.6% | 1.6% | 44.8% | 1.1% | 12.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 27.9% |
| 1989 | 631 | 2,3,4,5 | 3.6% | 4.9% | 0.8% | 3.5% | 0.0% | 4.9% | 0.0% | 1.9% | 42.3% | 0.5% | 7.8% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 1.6% | 26.8% |
| 1990 | 781 | 2,3,4,5 | 4.5% | 4.4% | 0.0% | 6.5% | 1.7% | 2.9% | 0.0% | 3.6% | 24.8% | 1.5% | 15.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 2.6% | 0.0% | 0.4% | 0.0% | 0.5% | 30.6% |
| 1991 | 799 | 2,3,4,5 | 2.8% | 3.4% | 0.0% | 2.3% | 0.0% | 1.9% | 0.0% | 5.9% | 44.8% | 1.3% | 7.1% | 0.6% | 0.5% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 27.7% |
| 1992 | 770 | 2,3,4,5 | 3.1% | 5.2% | 2.3% | 5.3% | 0.0% | 3.1% | 0.0% | 9.6% | 40.4% | 5.5% | 4.3% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 18.6% |
| 1993 | 523 | 2,3,4,5 | 1.3% | 2.3% | 0.0% | 1.7% | 0.0% | 1.7% | 0.0% | 4.2% | 50.5% | 4.2% | 8.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.2% | 24.7% |
| 1994 | 279 | 2,3,4,5 | 5.0% | 0.0% | 0.0% | 1.4% | 1.8% | 2.9% | 0.0% | 5.0% | 32.6% | 1.4% | 4.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.9% | 0.0% | 0.0% | 1.1% | 0.0% | 0.4% | 40.9% |
| 1995 | 248 | 2,3,4,5 | 6.9% | 0.0% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 31.0% | 0.0% | 10.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 49.2% |
| 1996 | 375 | 2,3,4,5 | 3.2% | 0.0% | 0.0% | 0.5% | 0.0% | 0.3% | 0.0% | 0.0% | 57.1% | 0.0% | 1.1% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.3% | 35.7% |
| 1997 | 234 | 2,3,4,5 | 4.3% | 0.0% | 0.0% | 3.4% | 0.0% | 0.0% | 4.3% | 0.9% | 32.5% | 3.4% | 4.7% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 44.4% |
| 1998 | 209 | 2,3,4,5 | 7.2% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 28.7% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 59.3% |
| 1999 | 298 | 2,3,4,5 | 6.0% | 2.0% | 0.0% | 3.7% | 2.3% | 0.0% | 3.7% | 0.0% | 17.1% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 58.7% |
| 2000 | 249 | 2,3,4,5 | 16.5% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.3% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 60.6% |
| 2001 | 534 | 2,3,4,5 | 5.2% | 10.5% | 0.0% | 0.0% | 9.2% | 0.6% | 0.0% | 0.0% | 12.5% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 57.5% |
| 2002 | 342 | 2,3,4,5 | 10.5% | 0.0% | 3.2% | 3.5% | 0.0% | 1.8% | 3.2% | 0.0% | 12.9% | 0.0% | 5.0% | 3.2% | 0.0% | 0.9% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 51.5% |
| 2003 | 262 | 2,3,4,5 | 8.4% | 0.4% | 1.9% | 0.0% | 0.0% | 3.4% | 0.0% | 0.0% | 18.3% | 0.0% | 0.0% | 9.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 55.3% |
| 2004 | 395 | 2,3,4,5 | 8.9% | 0.0% | 0.3% | 5.6% | 0.0% | 1.5% | 0.0% | 0.0% | 12.4% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 67.3% |
| 2005 | 609 | 2,3,4,5 | 9.5% | 0.3% | 0.0% | 2.0% | 0.0% | 5.3% | 2.8% | 0.0% | 22.3% | 0.0% | 1.0% | 2.6% | 0.5% | 0.7% | 0.0% | 0.0% | 3.4% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 48.4% |
| 2006 | 624 | 2,3,4,5 | 5.3% | 3.8% | 1.0% | 1.6% | 0.0% | 0.6% | 0.0% | 0.0% | 9.6% | 0.0% | 0.0% | 2.9% | 0.0% | 0.5% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 74.0% |
| 2007 | 624 | 2,3,4,5 | 12.3% | 0.6% | 0.3% | 5.3% | 3.2% | 0.6% | 2.2% | 0.0% | 15.9% | 0.0% | 1.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 55.3% |
| 2008 | 439 | 2,3,4,5 | 5.2% | 0.9% | 0.2% | 1.8% | 0.0% | 0.9% | 7.1% | 0.0% | 15.3% | 0.0% | 0.5% | 4.1% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 4.8% | 0.0% | 0.0% | 0.0% | 0.2% | 56.9% |
| 2009 | 558 | 2,3,4,5 | 4.7% | 5.6% | 0.0% | 2.0% | 0.0% | 1.4% | 4.8% | 0.0% | 13.8% | 0.0% | 0.0% | 1.6% | 0.5% | 0.0% | 0.0% | 0.0% | 1.1% | 0.7% | 0.0% | 0.0% | 0.0% | 1.6% | 62.2% |
| 2010 | 477 | 2,3,4,5 | 6.3% | 0.2% | 1.5% | 1.7% | 0.0% | 1.0% | 3.8% | 0.0% | 20.3% | 0.0% | 0.0% | 1.5% | 1.9% | 0.0% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 59.1% |
| 2011 | 528 | 2,3,4,5 | 8.0% | 1.7% | 1.3% | 0.0% | 1.3% | 1.1% | 1.3% | 0.0% | 12.3% | 0.0% | 0.0% | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 65.0% |
| 2012 | 554 | 2,3,4,5 | 7.6% | 1.8% | 0.0% | 3.2% | 1.4% | 2.9% | 0.0% | 0.0% | 27.3% | 0.0% | 0.0% | 4.2% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.7% | 49.1% |
| 2013 | 950 | 2,3,4,5 | 1.8% | 1.6% | 0.0% | 1.3% | 0.5% | 0.4% | 1.9% | 0.0% | 28.2% | 0.0% | 0.0% | 1.8% | 0.2% | 0.0% | 0.0% | 0.0% | 1.5% | 2.8% | 0.0% | 0.0% | 0.0% | 0.2% | 57.8% |
| 1979-2013 | 783 | | 5.8% | 1.7% | 0.5% | 2.5% | 0.6% | 1.9% | 1.1% | 3.9% | 27.3% | 2.7% | 6.1% | 1.4% | 0.2% | 0.1% | 0.0% | 0.0% | 1.0% | 0.5% | 0.0% | 0.1% | 0.0% | 0.8% | 42.1% |
| 1979-1984 | 1933 | | 3.6% | 0.7% | 0.6% | 3.2% | 0.0% | 2.7% | 0.1% | 14.9% | 27.9% | 8.4% | 14.6% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 22.3% |
| 1985-1995 | 686 | | 4.5% | 2.2% | 0.4% | 2.9% | 0.3% | 2.5% | 0.1% | 4.2% | 37.7% | 3.3% | 10.1% | 0.3% | 0.2% | 0.0% | 0.0% | 0.0% | 0.8% | 0.4% | 0.0% | 0.2% | 0.0% | 0.6% | 29.4% |
| 1996-1998 | 273 | | 4.9% | 0.2% | 0.0% | 1.3% | 0.0% | 0.1% | 1.4% | 0.3% | 39.4% | 1.1% | 1.9% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 1.0% | 46.5% |
| 1999-2013 | 496 | | 7.7% | 2.1% | 0.6% | 2.1% | 1.2% | 1.4% | 2.1% | 0.0% | 17.0% | 0.2% | 0.5% | 2.5% | 0.3% | 0.1% | 0.0% | 0.0% | 1.6% | 0.6% | 0.0% | 0.0% | 0.0% | 1.2% | 58.6% |

*Appendix C4. Percent distribution of Chilliwack River Fall (Fraser Late) total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | 3148 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | 4649 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | 2376 | 2,3,4 | 1.0% | 0.1% | 0.0% | 0.3% | 0.0% | 32.4% | 0.0% | 6.0% | 21.3% | 2.1% | 4.3% | 0.0% | 3.6% | 0.4% | 0.1% | 0.0% | 3.7% | 4.2% | 0.0% | 2.5% | 1.0% | 4.7% | 12.3% |
| 1986 | 2177 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 20.0% | 0.0% | 9.3% | 18.2% | 2.6% | 6.2% | 0.2% | 2.7% | 0.2% | 0.0% | 0.0% | 3.4% | 7.6% | 0.0% | 7.9% | 1.2% | 1.1% | 18.5% |
| 1987 | 2707 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 18.7% | 0.5% | 15.7% | 18.7% | 0.4% | 1.2% | 0.0% | 3.8% | 0.1% | 0.2% | 0.0% | 3.2% | 2.7% | 0.0% | 1.5% | 1.2% | 1.9% | 29.3% |
| 1988 | 2444 | 2,3,4,5 | 0.4% | 0.1% | 0.0% | 0.2% | 0.0% | 17.7% | 0.0% | 6.3% | 12.9% | 0.0% | 0.7% | 0.0% | 4.1% | 0.1% | 0.1% | 0.0% | 3.9% | 2.7% | 0.0% | 1.5% | 2.5% | 2.3% | 44.6% |
| 1989 | 1313 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 22.9% | 0.0% | 1.7% | 20.5% | 0.0% | 2.4% | 0.0% | 4.3% | 0.2% | 1.3% | 0.0% | 3.4% | 1.3% | 0.0% | 1.1% | 0.6% | 2.1% | 38.1% |
| 1990 | 1857 | 2,3,4,5 | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 10.1% | 1.9% | 3.3% | 16.3% | 0.1% | 3.0% | 0.0% | 5.9% | 0.5% | 0.0% | 0.0% | 14.9% | 7.2% | 0.0% | 1.8% | 1.0% | 3.9% | 29.2% |
| 1991 | 3164 | 2,3,4,5 | 0.2% | 0.1% | 0.0% | 0.4% | 0.0% | 19.0% | 0.6% | 8.9% | 15.8% | 0.2% | 2.6% | 0.0% | 12.7% | 0.2% | 0.4% | 0.0% | 5.7% | 5.1% | 0.0% | 2.5% | 1.5% | 0.9% | 23.1% |
| 1992 | 4231 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.1% | 0.0% | 19.7% | 0.1% | 6.5% | 10.8% | 0.7% | 1.1% | 0.0% | 8.6% | 0.1% | 0.0% | 0.0% | 0.9% | 3.5% | 0.0% | 0.5% | 1.1% | 1.5% | 44.5% |
| 1993 | 2028 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 13.1% | 0.3% | 8.0% | 7.2% | 0.0% | 0.1% | 0.0% | 7.1% | 0.0% | 0.2% | 0.0% | 0.0% | 1.1% | 0.0% | 1.3% | 1.7% | 2.3% | 57.3% |
| 1994 | 739 | 2,3,4,5 | 0.4% | 0.3% | 0.0% | 0.8% | 0.0% | 8.3% | 2.6% | 3.2% | 7.7% | 0.4% | 5.7% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 5.1% | 6.0% | 0.0% | 1.6% | 5.8% | 0.0% | 50.6% |
| 1995 | 2223 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.7% | 0.4% | 0.0% | 8.1% | 0.0% | 1.2% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 1.4% | 2.5% | 0.0% | 1.9% | 0.9% | 0.2% | 69.7% |
| 1996 | 1792 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.4% | 0.0% | 22.7% | 0.0% | 1.3% | 0.0% | 2.8% | 0.0% | 1.1% | 0.0% | 1.1% | 4.4% | 0.0% | 0.9% | 2.5% | 0.1% | 60.5% |
| 1997 | 2413 | 2,3,4,5 | 0.6% | 0.0% | 0.0% | 0.1% | 0.0% | 12.7% | 1.9% | 0.0% | 15.2% | 0.3% | 1.2% | 0.0% | 3.3% | 0.1% | 1.2% | 0.1% | 2.5% | 3.9% | 0.0% | 2.7% | 2.5% | 0.0% | 51.6% |
| 1998 | 3196 | 2,3,4,5 | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.3% | 0.0% | 4.0% | 0.0% | 0.0% | 0.3% | 2.1% | 0.0% | 1.1% | 0.0% | 0.3% | 0.9% | 0.0% | 0.2% | 1.3% | 0.5% | 88.4% |
| 1999 | 3392 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.2% | 0.0% | 0.3% | 1.9% | 0.0% | 11.1% | 0.0% | 0.0% | 0.0% | 12.9% | 0.5% | 0.5% | 0.0% | 0.7% | 0.5% | 0.0% | 0.4% | 1.6% | 0.3% | 68.8% |
| 2000 | 2717 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 5.9% | 2.7% | 0.0% | 5.2% | 0.0% | 0.0% | 0.4% | 4.4% | 0.1% | 0.0% | 0.0% | 0.8% | 1.0% | 0.0% | 0.0% | 2.5% | 0.0% | 77.0% |
| 2001 | 4265 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.6% | 1.6% | 0.0% | 9.2% | 0.0% | 0.0% | 0.2% | 5.6% | 0.4% | 0.6% | 0.0% | 1.1% | 4.8% | 0.0% | 0.2% | 12.9% | 0.0% | 59.8% |
| 2002 | 5147 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.1% | 0.0% | 8.2% | 4.9% | 0.0% | 4.3% | 0.0% | 0.1% | 0.2% | 7.4% | 1.2% | 0.6% | 0.0% | 0.3% | 2.0% | 0.0% | 0.6% | 5.3% | 0.0% | 64.5% |
| 2003 | 4956 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 5.3% | 2.6% | 0.0% | 3.1% | 0.0% | 0.0% | 0.2% | 7.6% | 0.4% | 0.5% | 0.0% | 0.3% | 1.2% | 0.0% | 0.3% | 6.1% | 5.6% | 66.6% |
| 2004 | 6792 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.2% | 0.0% | 5.3% | 2.4% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 6.7% | 0.2% | 0.1% | 0.0% | 0.1% | 1.1% | 0.0% | 0.7% | 4.8% | 0.4% | 77.2% |
| 2005 | 4057 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 7.5% | 4.2% | 0.0% | 3.7% | 0.0% | 0.1% | 0.2% | 3.7% | 0.9% | 0.0% | 0.0% | 0.9% | 1.0% | 0.0% | 3.5% | 6.0% | 0.0% | 68.2% |
| 2006 | 3037 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 7.3% | 2.1% | 0.0% | 2.3% | 0.0% | 0.0% | 0.0% | 2.7% | 0.3% | 0.1% | 0.0% | 0.3% | 1.7% | 0.0% | 0.6% | 4.4% | 0.9% | 76.8% |
| 2007 | 1826 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 8.3% | 3.2% | 0.0% | 2.3% | 0.0% | 0.0% | 0.0% | 2.7% | 0.2% | 0.0% | 0.0% | 0.7% | 1.8% | 0.0% | 3.2% | 6.7% | 0.2% | 70.4% |
| 2008 | 2867 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 10.9% | 4.8% | 0.0% | 2.1% | 0.0% | 0.1% | 0.0% | 4.7% | 1.6% | 0.0% | 0.1% | 0.9% | 2.0% | 0.0% | 1.0% | 9.7% | 0.6% | 61.2% |
| 2009 | 3048 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 3.2% | 0.0% | 4.6% | 0.0% | 0.0% | 0.0% | 0.6% | 0.3% | 0.0% | 0.0% | 1.2% | 3.0% | 0.0% | 3.7% | 14.3% | 1.2% | 66.0% |
| 2010 | 5386 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.1% | 0.0% | 3.1% | 3.1% | 0.0% | 7.6% | 0.0% | 0.0% | 0.0% | 3.7% | 1.1% | 0.4% | 0.0% | 1.1% | 1.7% | 0.0% | 1.9% | 7.0% | 0.7% | 68.2% |
| 2011 | 5001 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 4.4% | 3.5% | 0.0% | 4.2% | 0.0% | 0.0% | 0.2% | 1.5% | 0.7% | 0.0% | 0.0% | 1.4% | 3.3% | 0.0% | 2.0% | 3.6% | 0.0% | 75.3% |
| 2012 | 5600 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 1.6% | 0.0% | 12.6% | 0.0% | 0.0% | 0.0% | 5.1% | 0.7% | 0.1% | 0.1% | 0.7% | 7.8% | 0.0% | 0.5% | 6.5% | 0.0% | 63.3% |
| 2013 | 13451 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 2.3% | 2.2% | 0.0% | 8.6% | 0.0% | 0.0% | 0.1% | 8.8% | 1.0% | 0.1% | 0.0% | 0.8% | 2.9% | 0.0% | 2.9% | 5.7% | 0.3% | 64.3% |
| 1979-2013 | 3593 | | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 9.8% | 1.8% | 2.4% | 9.7% | 0.2% | 1.1% | 0.1% | 4.9% | 0.4% | 0.3% | 0.0% | 2.1% | 3.1% | 0.0% | 1.7% | 4.2% | 1.1% | 56.7% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 2296 | | 0.3% | 0.1% | 0.0% | 0.3% | 0.0% | 17.7% | 0.6% | 6.3% | 14.3% | 0.6% | 2.6% | 0.0% | 5.0% | 0.2% | 0.2% | 0.0% | 4.2% | 4.0% | 0.0% | 2.2% | 1.7% | 1.9% | 37.9% |
| 1996-1998 | 2467 | | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 0.9% | 0.0% | 14.0% | 0.1% | 0.8% | 0.1% | 2.8% | 0.0% | 1.1% | 0.0% | 1.3% | 3.1% | 0.0% | 1.2% | 2.1% | 0.2% | 66.8% |
| 1999-2013 | 4769 | | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 5.0% | 2.9% | 0.0% | 5.5% | 0.0% | 0.0% | 0.1% | 5.2% | 0.6% | 0.2% | 0.0% | 0.7% | 2.4% | 0.0% | 1.4% | 6.5% | 0.7% | 68.5% |

*Appendix C5. Percent distribution of Chilkat River total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1998 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1999 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2000 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2001 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2002 | 63 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | 309 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2004 | 520 | 3,4,5 | 5.8% | 8.8% | 6.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 78.8% |
| 2005 | 561 | 3,4,5,6 | 5.2% | 4.8% | 3.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 86.1% |
| 2006 | 317 | 3,4,5,6 | 3.5% | 1.3% | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 91.2% |
| 2007 | 296 | 3,4,5,6 | 6.4% | 9.8% | 9.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 74.3% |
| 2008 | 435 | 3,4,5,6 | 3.7% | 6.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 89.4% |
| 2009 | 593 | 3,4,5,6 | 3.5% | 1.9% | 3.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 90.7% |
| 2010 | 303 | 3,4,5,6 | 4.6% | 10.6% | 8.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 75.9% |
| 2011 | 356 | 3,4,5,6 | 7.3% | 7.0% | 6.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 79.2% |
| 2012 | 231 | 3,4,5,6 | 7.8% | 10.0% | 8.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 72.3% |
| 2013 | 262 | 3,4,5,6 | 1.9% | 16.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 81.3% |
| 1979-2013 | 387 | | 5.0% | 7.7% | 5.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 81.9% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1996-1998 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1999-2013 | 387 | | 5.0% | 7.7% | 5.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 81.9% |

*Appendix C6. Percent distribution of Cowichan River Fall (Lower Strait of Georgia Natural) total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 126 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 311 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 628 | 2,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | 2085 | 2,3,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 2.2% | 0.0% | 12.9% | 56.6% | 1.1% | 9.8% | 0.0% | 0.6% | 0.2% | 0.0% | 0.0% | 3.5% | 1.9% | 0.0% | 0.7% | 0.0% | 0.3% | 9.9% |
| 1991 | 4254 | 2,3,4 | 0.1% | 0.0% | 0.0% | 0.2% | 0.0% | 3.8% | 0.7% | 9.0% | 61.5% | 0.4% | 4.1% | 0.2% | 0.7% | 0.0% | 0.0% | 0.0% | 3.2% | 0.9% | 0.0% | 0.4% | 0.0% | 0.4% | 14.5% |
| 1992 | 4616 | 2,3,4,5 | 0.0% | 0.1% | 0.0% | 0.4% | 0.0% | 8.6% | 1.1% | 17.7% | 52.9% | 1.0% | 4.0% | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | 1.3% | 1.3% | 0.0% | 0.9% | 0.0% | 0.4% | 10.1% |
| 1993 | 4145 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.1% | 0.0% | 7.8% | 1.4% | 11.9% | 54.5% | 0.5% | 3.3% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.9% | 0.5% | 0.0% | 1.0% | 0.0% | 0.2% | 17.1% |
| 1994 | 1346 | 2,3,4,5 | 0.5% | 0.0% | 0.0% | 0.4% | 0.0% | 3.9% | 0.7% | 4.8% | 43.0% | 0.1% | 7.5% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 4.1% | 0.7% | 0.0% | 4.1% | 0.2% | 0.6% | 29.0% |
| 1995 | 1702 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 5.3% | 0.6% | 0.0% | 41.0% | 0.0% | 2.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 1.0% | 0.0% | 2.1% | 0.0% | 1.4% | 43.1% |
| 1996 | 1369 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.9% | 0.0% | 52.2% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 4.7% | 0.0% | 4.5% | 0.0% | 1.3% | 34.0% |
| 1997 | 940 | 2,3,4,5 | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.2% | 0.9% | 0.0% | 28.6% | 0.0% | 1.4% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 3.5% | 3.4% | 0.0% | 0.3% | 0.0% | 0.7% | 56.6% |
| 1998 | 493 | 2,3,4,5 | 3.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 1.6% | 0.0% | 34.3% | 0.0% | 0.4% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 3.4% | 0.0% | 0.0% | 8.3% | 0.0% | 3.7% | 43.2% |
| 1999 | 595 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.4% | 0.0% | 51.3% | 0.0% | 0.0% | 0.5% | 0.8% | 0.5% | 0.0% | 0.0% | 7.4% | 0.0% | 0.0% | 1.2% | 0.0% | 4.2% | 30.8% |
| 2000 | 806 | 2,3,4,5 | 0.9% | 0.4% | 0.0% | 0.0% | 0.0% | 1.2% | 4.7% | 0.0% | 25.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 2.2% | 0.0% | 0.5% | 0.0% | 1.2% | 58.1% |
| 2001 | 801 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 9.2% | 0.0% | 0.0% | 33.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 12.5% | 2.7% | 0.0% | 6.2% | 0.0% | 4.4% | 31.6% |
| 2002 | 721 | 2,3,4,5 | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 3.5% | 3.2% | 0.0% | 36.2% | 0.0% | 0.0% | 1.0% | 0.3% | 0.0% | 0.3% | 0.0% | 4.4% | 6.2% | 0.0% | 7.8% | 2.4% | 2.8% | 30.5% |
| 2003 | 399 | 2,3,4,5 | 2.0% | 0.3% | 0.0% | 2.5% | 0.0% | 9.0% | 3.0% | 0.0% | 39.3% | 0.3% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 7.8% | 3.8% | 0.0% | 4.5% | 1.5% | 2.3% | 23.3% |
| 2004 | 394 | 2,3,4,5 | 0.0% | 0.3% | 0.0% | 0.8% | 0.0% | 15.2% | 11.4% | 0.0% | 27.7% | 0.0% | 0.0% | 2.0% | 2.5% | 0.0% | 0.0% | 0.0% | 6.9% | 2.0% | 0.0% | 1.5% | 0.0% | 8.6% | 21.1% |
| 2005 | 385 | 2,3,4,5 | 0.0% | 0.3% | 0.0% | 1.3% | 4.7% | 22.1% | 2.1% | 0.0% | 9.1% | 0.0% | 1.3% | 0.0% | 0.3% | 0.8% | 0.0% | 0.0% | 17.1% | 1.6% | 0.0% | 6.8% | 0.0% | 9.6% | 23.1% |
| 2006 | 291 | 3,4,5 | 1.0% | 0.0% | 0.0% | 0.7% | 0.0% | 20.6% | 11.0% | 0.0% | 15.1% | 0.0% | 0.0% | 0.0% | 2.7% | 0.7% | 0.0% | 0.0% | 4.8% | 5.2% | 0.0% | 6.2% | 0.0% | 4.8% | 27.1% |
| 2007 | 261 | 2,4,5 | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 8.4% | 2.3% | 0.0% | 17.6% | 0.0% | 1.5% | 0.0% | 0.4% | 0.8% | 0.0% | 0.0% | 9.6% | 0.0% | 0.0% | 5.7% | 0.0% | 2.3% | 50.6% |
| 2008 | 292 | 2,3,5 | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 11.3% | 11.6% | 0.0% | 33.9% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 5.1% | 0.7% | 0.0% | 5.5% | 0.0% | 4.1% | 26.4% |
| 2009 | 679 | 2,3,4 | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 5.2% | 7.2% | 0.0% | 44.5% | 0.0% | 0.0% | 0.1% | 0.6% | 0.0% | 0.0% | 0.0% | 6.3% | 5.0% | 0.0% | 4.9% | 0.0% | 10.0% | 15.8% |
| 2010 | 1310 | 2,3,4,5 | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 7.9% | 2.4% | 0.0% | 41.5% | 0.0% | 0.0% | 0.3% | 1.1% | 0.0% | 0.0% | 0.0% | 7.3% | 3.8% | 0.0% | 1.4% | 0.0% | 2.4% | 31.6% |
| 2011 | 1962 | 2,3,4,5 | 0.7% | 0.2% | 0.0% | 0.2% | 0.2% | 5.2% | 5.3% | 0.0% | 20.5% | 0.0% | 0.0% | 1.2% | 1.3% | 0.3% | 0.0% | 0.0% | 4.0% | 5.7% | 0.0% | 2.8% | 0.0% | 3.1% | 49.3% |
| 2012 | 3498 | 2,3,4,5 | 0.6% | 0.1% | 0.1% | 0.5% | 0.0% | 3.2% | 3.1% | 0.0% | 23.5% | 0.0% | 0.1% | 0.3% | 2.4% | 0.3% | 0.0% | 0.0% | 3.9% | 8.5% | 0.0% | 16.0% | 0.0% | 1.8% | 35.5% |
| 2013 | 3209 | 2,3,4,5 | 0.3% | 0.2% | 0.0% | 0.0% | 0.1% | 2.4% | 3.9% | 0.0% | 31.8% | 0.0% | 0.0% | 0.5% | 4.0% | 0.3% | 0.0% | 0.0% | 2.5% | 2.5% | 0.0% | 2.3% | 0.0% | 4.0% | 45.2% |
| 1979-2013 | 1523 |  | 0.6% | 0.1% | 0.1% | 0.3% | 0.2% | 6.7% | 3.4% | 2.3% | 36.5% | 0.1% | 1.5% | 0.3% | 0.9% | 0.2% | 0.0% | 0.0% | 5.3% | 2.7% | 0.0% | 4.0% | 0.2% | 3.1% | 31.6% |
| 1979-1984 | 0 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 3025 |  | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 5.3% | 0.8% | 9.4% | 51.6% | 0.5% | 5.3% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 2.6% | 1.0% | 0.0% | 1.5% | 0.0% | 0.5% | 20.6% |
| 1996-1998 | 934 |  | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 1.1% | 0.0% | 38.4% | 0.0% | 0.9% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 2.6% | 2.7% | 0.0% | 4.4% | 0.0% | 1.9% | 44.6% |
| 1999-2013 | 1040 |  | 0.5% | 0.1% | 0.1% | 0.4% | 0.3% | 8.3% | 5.0% | 0.0% | 30.1% | 0.0% | 0.2% | 0.4% | 1.2% | 0.2% | 0.0% | 0.0% | 7.0% | 3.3% | 0.0% | 4.9% | 0.3% | 4.4% | 33.3% |

*Appendix C7. Percent distribution of Cowlitz Fall Tule (Fall Cowlitz Hatchery) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | | |
| 1979 | 26 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 280 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 414 | 2,3,4 | 5.8% | 0.0% | 0.0% | 2.2% | 0.0% | 17.1% | 0.0% | 0.0% | 6.3% | 0.0% | 3.4% | 0.0% | 8.7% | 13.0% | 4.1% | 0.0% | 0.2% | 0.0% | 0.0% | 14.0% | 0.0% | 4.3% | 20.8% |
| 1982 | 498 | 2,3,4,5 | 4.2% | 0.0% | 0.4% | 1.4% | 0.0% | 16.3% | 1.0% | 0.0% | 0.0% | 0.4% | 3.4% | 0.0% | 15.7% | 10.8% | 4.6% | 0.0% | 2.8% | 0.0% | 0.0% | 7.6% | 1.6% | 2.2% | 27.5% |
| 1983 | 615 | 2,3,4,5 | 4.1% | 0.0% | 0.0% | 7.2% | 0.0% | 18.9% | 0.0% | 0.0% | 0.3% | 3.9% | 1.0% | 0.0% | 7.3% | 17.6% | 0.5% | 0.3% | 0.5% | 0.0% | 0.0% | 4.4% | 1.0% | 5.0% | 28.1% |
| 1984 | 788 | 2,3,4,5 | 5.1% | 0.0% | 0.0% | 7.5% | 0.0% | 25.3% | 0.0% | 0.0% | 0.1% | 2.3% | 1.9% | 0.6% | 1.6% | 0.1% | 3.2% | 0.0% | 0.1% | 0.0% | 0.0% | 14.8% | 3.3% | 0.6% | 33.4% |
| 1985 | 743 | 2,3,4,5 | 3.9% | 0.8% | 0.0% | 4.4% | 0.0% | 12.7% | 0.0% | 0.0% | 0.7% | 0.0% | 5.5% | 0.0% | 3.4% | 4.7% | 1.7% | 0.9% | 0.5% | 0.7% | 0.0% | 6.9% | 7.7% | 0.8% | 44.7% |
| 1986 | 1550 | 2,3,4,5 | 0.5% | 0.1% | 0.0% | 0.2% | 0.0% | 13.9% | 0.0% | 0.0% | 0.3% | 0.7% | 1.8% | 0.0% | 6.5% | 4.9% | 7.8% | 0.5% | 0.0% | 0.5% | 0.0% | 31.2% | 6.3% | 2.6% | 21.9% |
| 1987 | 1476 | 2,3,4,5 | 5.6% | 0.6% | 0.0% | 4.6% | 0.0% | 11.3% | 0.9% | 0.0% | 0.0% | 1.4% | 0.7% | 0.0% | 4.7% | 6.6% | 7.4% | 0.5% | 0.1% | 0.5% | 0.0% | 21.5% | 7.7% | 0.7% | 25.1% |
| 1988 | 1557 | 2,3,4,5 | 1.8% | 0.6% | 0.0% | 2.1% | 0.0% | 17.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 9.2% | 1.6% | 6.6% | 0.4% | 0.0% | 0.0% | 0.0% | 23.1% | 10.2% | 1.1% | 24.7% |
| 1989 | 607 | 2,3,4,5 | 3.8% | 0.0% | 0.7% | 4.8% | 0.0% | 7.2% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 8.7% | 3.1% | 10.0% | 0.0% | 0.0% | 0.3% | 0.0% | 7.1% | 7.1% | 1.8% | 44.0% |
| 1990 | 293 | 2,3,4,5 | 4.4% | 0.0% | 0.0% | 2.4% | 0.0% | 15.7% | 0.0% | 0.0% | 0.0% | 3.1% | 3.4% | 0.0% | 7.5% | 7.8% | 2.0% | 0.0% | 0.0% | 4.1% | 0.0% | 0.0% | 1.0% | 6.8% | 41.6% |
| 1991 | 149 | 2,3,4,5 | 10.7% | 8.1% | 0.0% | 4.0% | 0.0% | 6.0% | 3.4% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 2.7% | 3.4% | 8.1% | 0.0% | 0.0% | 0.0% | 0.0% | 10.1% | 4.7% | 0.7% | 36.9% |
| 1992 | 202 | 2,3,4,5 | 2.5% | 0.0% | 0.0% | 0.0% | 0.0% | 20.3% | 0.0% | 0.0% | 2.0% | 2.5% | 0.0% | 0.0% | 7.9% | 5.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 0.0% | 4.5% | 50.0% |
| 1993 | 362 | 2,3,4,5 | 3.9% | 0.0% | 0.0% | 3.0% | 0.0% | 7.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 14.4% | 7.5% | 4.7% | 0.3% | 0.0% | 0.0% | 0.0% | 3.3% | 15.2% | 2.8% | 36.5% |
| 1994 | 215 | 2,3,4,5 | 5.1% | 0.0% | 0.0% | 1.9% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.4% | 80.5% |
| 1995 | 174 | 2,3,4,5 | 1.1% | 0.0% | 0.0% | 2.9% | 0.0% | 2.9% | 2.3% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 2.9% | 0.0% | 1.7% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 1.7% | 1.7% | 80.5% |
| 1996 | 277 | 2,3,4,5 | 4.7% | 0.0% | 0.0% | 0.4% | 0.0% | 0.7% | 0.0% | 0.0% | 2.5% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 5.4% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 3.6% | 0.0% | 80.9% |
| 1997 | 171 | 2,3,4,5 | 5.8% | 0.0% | 10.5% | 2.3% | 0.0% | 5.8% | 0.0% | 0.0% | 3.5% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 4.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 65.5% |
| 1998 | 78 | 2,3,4,5 | 3.8% | 0.0% | 0.0% | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.6% | 2.6% | 7.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.7% | 71.8% |
| 1999 | 150 | 2,3,4,5 | 6.7% | 0.0% | 4.0% | 0.0% | 6.7% | 4.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.0% | 2.7% | 5.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.7% | 0.7% | 51.3% |
| 2000 | 108 | 2,3,4,5 | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 8.3% | 13.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.9% | 1.9% | 13.9% | 0.0% | 0.0% | 0.0% | 0.0% | 5.6% | 4.6% | 0.0% | 46.3% |
| 2001 | 478 | 2,3,4,5 | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.6% | 9.6% | 8.6% | 0.4% | 0.0% | 0.0% | 0.0% | 1.7% | 2.5% | 2.3% | 65.5% |
| 2002 | 573 | 2,3,4,5 | 7.2% | 0.0% | 0.0% | 1.0% | 0.0% | 6.6% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 19.0% | 20.1% | 8.7% | 1.6% | 0.0% | 0.0% | 0.0% | 3.3% | 3.7% | 1.9% | 23.7% |
| 2003 | 543 | 2,3,4,5 | 5.3% | 0.0% | 0.0% | 1.3% | 0.0% | 9.6% | 2.2% | 0.0% | 1.7% | 0.0% | 0.0% | 0.0% | 9.6% | 6.8% | 9.2% | 0.0% | 0.0% | 0.0% | 0.0% | 8.7% | 5.0% | 3.7% | 37.0% |
| 2004 | 215 | 2,3,4,5 | 4.7% | 0.0% | 0.0% | 0.9% | 0.0% | 6.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.2% | 9.8% | 9.3% | 0.0% | 0.0% | 1.9% | 0.0% | 8.8% | 2.3% | 6.5% | 39.5% |
| 2005 | 235 | 2,3,4,5 | 2.6% | 8.1% | 0.0% | 2.6% | 0.0% | 4.3% | 3.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.7% | 5.1% | 3.4% | 0.0% | 0.0% | 0.0% | 0.0% | 3.4% | 3.8% | 1.3% | 57.4% |
| 2006 | 142 | 2,3,4,5 | 5.6% | 0.0% | 0.0% | 2.8% | 0.0% | 4.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.3% | 2.1% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 12.0% | 0.0% | 62.7% |
| 2007 | 146 | 2,3,4,5 | 3.4% | 2.7% | 0.0% | 5.5% | 0.0% | 11.0% | 3.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.4% | 2.7% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 55.5% |
| 2008 | 203 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.0% | 5.9% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 3.0% | 11.3% | 1.5% | 63.5% |
| 2009 | 473 | 2,3,4,5 | 2.5% | 0.0% | 2.1% | 0.0% | 1.1% | 1.5% | 1.7% | 0.0% | 4.7% | 0.0% | 0.0% | 0.0% | 6.1% | 3.8% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 1.5% | 7.6% | 3.8% | 61.1% |
| 2010 | 633 | 2,3,4,5 | 3.5% | 0.5% | 0.0% | 1.1% | 0.3% | 3.2% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.0% | 10.3% | 1.7% | 0.5% | 0.0% | 0.0% | 0.0% | 1.7% | 1.3% | 3.0% | 61.6% |
| 2011 | 1376 | 2,3,4,5 | 1.2% | 0.1% | 0.1% | 0.3% | 0.4% | 1.2% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 1.5% | 2.4% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% | 0.4% | 0.7% | 0.4% | 90.2% |
| 2012 | 592 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 1.4% | 0.3% | 2.5% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 3.9% | 6.1% | 1.0% | 0.5% | 0.0% | 0.0% | 0.0% | 2.4% | 6.4% | 0.2% | 74.7% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 501 | | 3.9% | 0.7% | 0.6% | 2.2% | 0.3% | 8.6% | 1.3% | 0.0% | 0.7% | 0.5% | 0.8% | 0.0% | 6.4% | 5.6% | 4.5% | 0.2% | 0.2% | 0.4% | 0.0% | 6.0% | 4.6% | 2.4% | 50.1% |
| 1979-1984 | 579 | | 4.8% | 0.0% | 0.1% | 4.6% | 0.0% | 19.4% | 0.3% | 0.0% | 1.7% | 1.6% | 2.4% | 0.2% | 8.3% | 10.4% | 3.1% | 0.1% | 0.9% | 0.0% | 0.0% | 10.2% | 1.5% | 3.1% | 27.4% |
| 1985-1995 | 666 | | 3.9% | 0.9% | 0.1% | 2.8% | 0.0% | 10.7% | 0.6% | 0.0% | 0.3% | 0.8% | 1.4% | 0.0% | 6.3% | 4.1% | 4.7% | 0.2% | 0.2% | 0.6% | 0.0% | 9.8% | 5.6% | 2.8% | 44.2% |
| 1996-1998 | 175 | | 4.8% | 0.0% | 3.5% | 2.2% | 0.0% | 2.2% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.9% | 5.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 1.6% | 2.6% | 72.7% |
| 1999-2013 | 419 | | 3.4% | 0.8% | 0.4% | 1.2% | 0.6% | 5.3% | 2.4% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 7.0% | 6.4% | 4.5% | 0.3% | 0.0% | 0.5% | 0.0% | 3.0% | 5.4% | 1.8% | 56.4% |

*Appendix C8. Percent distribution of Dome Creek Spring (Fraser Early) total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | 41 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | 158 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.6% | 10.8% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 13.9% | 0.0% | 5.1% | 3.2% | 0.0% | 64.6% |
| 1992 | 162 | 3,4,5,6 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.3% | 0.0% | 3.1% | 9.3% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 0.6% | 0.0% | 5.6% | 0.0% | 45.1% | 0.0% | 0.0% | 30.9% |
| 1993 | 355 | 3,4,5,6 | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 1.7% | 0.0% | 0.0% | 6.5% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 49.6% | 5.6% | 0.0% | 33.5% |
| 1994 | 302 | 3,4,5,6 | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 27.2% | 2.3% | 0.0% | 66.2% |
| 1995 | 530 | 3,4,5,6 | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 1.5% | 0.0% | 0.0% | 6.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 20.9% | 3.0% | 0.0% | 65.7% |
| 1996 | 366 | 3,4,5,6 | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.3% | 0.0% | 0.0% | 7.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 37.4% | 4.4% | 0.0% | 48.1% |
| 1997 | 326 | 3,4,5,6 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.3% | 0.0% | 7.7% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 39.0% | 0.0% | 0.0% | 50.0% |
| 1998 | 247 | 3,4,5,6 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 44.1% | 5.3% | 1.6% | 41.3% |
| 1999 | 56 | 3,4,5,6 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 32.1% | 10.7% | 0.0% | 41.1% |
| 2000 | 111 | 3,4,5,6 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.0% | 0.0% | 0.0% | 0.0% | 2.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 44.1% | 0.0% | 0.0% | 35.1% |
| 2001 | 316 | 3,4,5,6 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 15.5% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 58.9% | 2.8% | 0.0% | 20.6% |
| 2002 | 139 | 4,5,6 | 0.0% | 0.0% | 0.0% | 12.2% | 0.0% | 10.8% | 0.0% | 0.0% | 12.9% | 0.0% | 0.0% | 0.0% | 3.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.1% | 0.0% | 0.0% | 40.3% |
| 2003 | 154 | 3,5,6 | 0.0% | 0.0% | 0.0% | 5.2% | 0.0% | 0.0% | 7.1% | 0.0% | 13.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 59.1% | 0.0% | 0.0% | 14.9% |
| 2004 | 8 | 3,4,6 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2005 | 228 | 3,4,5 | 0.0% | 0.0% | 0.0% | 3.9% | 0.0% | 0.4% | 0.0% | 0.0% | 4.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 58.8% | 7.0% | 0.0% | 24.6% |
| 2006 | 111 | 4,5,6 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.2% | 0.0% | 0.0% | 6.3% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 43.2% | 0.0% | 0.0% | 42.3% |
| 2007 | 20 | 5,6 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2008 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2009 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2010 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2011 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2012 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 237 | | 0.0% | 0.0% | 0.0% | 1.5% | 0.1% | 2.1% | 0.5% | 0.2% | 9.6% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.1% | 1.6% | 0.0% | 39.0% | 3.0% | 0.1% | 41.3% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 301 | | 0.1% | 0.0% | 0.0% | 0.2% | 0.3% | 2.0% | 0.0% | 0.7% | 6.8% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.1% | 0.0% | 4.2% | 0.0% | 29.6% | 2.8% | 0.0% | 52.2% |
| 1996-1998 | 313 | | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.3% | 0.1% | 0.0% | 7.5% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.4% | 0.7% | 0.0% | 40.2% | 3.2% | 0.5% | 46.5% |
| 1999-2013 | 159 | | 0.0% | 0.0% | 0.0% | 3.1% | 0.0% | 2.9% | 1.0% | 0.0% | 12.4% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 45.2% | 2.9% | 0.0% | 31.3% |

*Appendix C9. Percent distribution of Elk River (Oregon Coast) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 26 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 154 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 462 | 2,3,4 | 4.3% | 0.0% | 0.2% | 5.8% | 0.0% | 6.5% | 0.0% | 0.0% | 0.0% | 1.1% | 1.9% | 0.0% | 2.4% | 0.9% | 13.2% | 0.0% | 0.2% | 0.0% | 3.5% | 0.0% | 38.5% | 0.0% | 21.4% |
| 1982 | 2135 | 2,3,4,5 | 1.2% | 0.4% | 0.2% | 2.0% | 0.0% | 5.4% | 0.0% | 0.0% | 0.0% | 0.3% | 0.6% | 0.0% | 1.3% | 0.6% | 15.7% | 0.3% | 0.3% | 0.0% | 3.1% | 0.1% | 41.2% | 0.0% | 27.3% |
| 1983 | 2931 | 2,3,4,5 | 3.2% | 0.1% | 0.0% | 5.7% | 0.0% | 6.9% | 0.1% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 2.3% | 0.1% | 3.8% | 0.2% | 0.0% | 0.2% | 5.4% | 0.0% | 28.9% | 0.0% | 41.7% |
| 1984 | 2349 | 2,3,4,5 | 2.9% | 0.0% | 0.0% | 4.1% | 0.1% | 5.2% | 0.0% | 0.0% | 0.0% | 0.5% | 0.2% | 0.0% | 0.4% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 6.0% | 0.0% | 20.9% | 0.0% | 57.9% |
| 1985 | 2024 | 2,3,4,5 | 1.6% | 0.0% | 0.0% | 2.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.1% | 0.1% | 1.1% | 0.7% | 0.0% | 0.0% | 3.8% | 0.0% | 34.6% | 0.8% | 53.8% |
| 1986 | 957 | 2,3,4,5 | 1.6% | 0.0% | 0.0% | 2.6% | 0.0% | 10.6% | 0.3% | 0.0% | 0.3% | 1.8% | 0.0% | 0.0% | 0.5% | 0.2% | 21.9% | 0.7% | 0.0% | 0.0% | 9.1% | 0.0% | 15.9% | 0.1% | 34.4% |
| 1987 | 2073 | 2,3,4,5 | 0.8% | 0.0% | 0.0% | 3.4% | 0.0% | 5.6% | 0.4% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 1.1% | 0.1% | 15.8% | 0.8% | 0.0% | 0.0% | 6.0% | 0.0% | 25.9% | 0.0% | 39.5% |
| 1988 | 2152 | 2,3,4,5 | 0.4% | 0.0% | 0.0% | 2.6% | 0.0% | 3.6% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.5% | 0.0% | 16.0% | 0.5% | 0.0% | 0.2% | 0.2% | 0.0% | 36.9% | 0.0% | 38.8% |
| 1989 | 1364 | 2,3,4,5 | 0.7% | 0.0% | 0.3% | 1.2% | 0.4% | 1.8% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.3% | 0.0% | 14.9% | 0.4% | 0.0% | 0.0% | 11.7% | 0.0% | 32.7% | 0.4% | 34.9% |
| 1990 | 553 | 2,3,4,5 | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 3.6% | 0.0% | 7.2% | 0.0% | 0.0% | 0.0% | 4.9% | 0.0% | 39.2% | 0.4% | 40.7% |
| 1991 | 463 | 2,3,4,5 | 0.0% | 0.6% | 0.0% | 2.2% | 0.0% | 5.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.4% | 0.0% | 4.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 28.9% | 0.2% | 57.5% |
| 1992 | 658 | 2,3,4,5 | 2.7% | 3.0% | 0.0% | 0.0% | 0.0% | 6.5% | 0.6% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 6.4% | 0.3% | 0.9% | 0.0% | 4.3% | 0.0% | 36.6% | 0.2% | 38.3% |
| 1993 | 914 | 2,3,4,5 | 2.5% | 0.0% | 0.0% | 2.2% | 0.0% | 5.4% | 0.8% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 1.6% | 0.2% | 6.9% | 0.0% | 0.0% | 0.0% | 12.4% | 0.0% | 22.0% | 0.2% | 45.5% |
| 1994 | 1643 | 2,3,4,5 | 3.2% | 0.4% | 0.0% | 1.6% | 0.4% | 2.5% | 0.0% | 0.0% | 0.0% | 0.1% | 0.4% | 0.0% | 0.4% | 0.0% | 6.8% | 0.0% | 0.0% | 0.0% | 9.5% | 0.0% | 36.0% | 0.2% | 38.5% |
| 1995 | 3377 | 2,3,4,5 | 2.1% | 0.2% | 0.5% | 1.1% | 0.2% | 1.9% | 0.2% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.1% | 0.0% | 4.9% | 0.1% | 0.1% | 0.0% | 7.6% | 0.0% | 33.4% | 0.1% | 46.3% |
| 1996 | 4957 | 2,3,4,5 | 2.0% | 0.0% | 0.0% | 1.3% | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.1% | 0.1% | 0.0% | 12.3% | 0.1% | 0.0% | 0.1% | 15.6% | 0.0% | 12.4% | 0.3% | 55.1% |
| 1997 | 4070 | 2,3,4,5 | 14.1% | 0.0% | 0.1% | 1.8% | 0.2% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.6% | 0.0% | 6.4% | 0.0% | 0.0% | 0.0% | 11.8% | 0.0% | 19.3% | 0.2% | 44.0% |
| 1998 | 6033 | 2,3,4,5 | 7.9% | 0.0% | 0.0% | 3.2% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.2% | 0.0% | 4.7% | 0.1% | 0.0% | 0.0% | 7.7% | 0.0% | 10.0% | 0.0% | 66.0% |
| 1999 | 5125 | 2,3,4,5 | 8.5% | 0.0% | 0.4% | 2.8% | 0.3% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.7% | 0.1% | 1.9% | 0.0% | 0.0% | 0.0% | 16.4% | 0.0% | 20.2% | 0.1% | 48.3% |
| 2000 | 3727 | 2,3,4,5 | 9.6% | 0.1% | 0.2% | 2.0% | 0.7% | 0.9% | 0.1% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.8% | 0.6% | 8.6% | 0.2% | 0.1% | 0.0% | 24.4% | 0.0% | 22.6% | 0.2% | 29.1% |
| 2001 | 9512 | 2,3,4,5 | 5.3% | 0.0% | 0.4% | 2.4% | 0.0% | 1.1% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 0.9% | 8.4% | 0.3% | 0.0% | 0.0% | 8.5% | 0.0% | 14.2% | 0.1% | 55.7% |
| 2002 | 6787 | 2,3,4,5 | 9.2% | 0.0% | 0.9% | 6.4% | 1.0% | 1.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 3.2% | 1.0% | 5.1% | 0.6% | 0.0% | 0.0% | 10.8% | 0.0% | 10.8% | 0.0% | 49.0% |
| 2003 | 4295 | 2,3,4,5 | 8.7% | 0.0% | 0.4% | 5.2% | 0.3% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 3.9% | 0.1% | 6.7% | 0.2% | 0.0% | 0.0% | 16.4% | 0.0% | 18.5% | 0.0% | 37.8% |
| 2004 | 5779 | 2,3,4,5 | 8.0% | 0.0% | 0.4% | 3.9% | 0.7% | 3.6% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 0.1% | 3.6% | 0.1% | 0.0% | 0.0% | 18.1% | 0.0% | 7.5% | 0.2% | 51.3% |
| 2005 | 2281 | 2,3,4,5 | 12.6% | 0.0% | 0.3% | 6.8% | 2.1% | 5.3% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 2.8% | 0.4% | 2.7% | 0.2% | 0.0% | 0.0% | 15.9% | 0.0% | 11.3% | 0.0% | 38.0% |
| 2006 | 2431 | 2,3,4,5 | 7.4% | 0.0% | 0.0% | 5.6% | 1.4% | 5.7% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 4.4% | 0.3% | 1.7% | 0.2% | 0.0% | 0.0% | 18.9% | 0.0% | 12.7% | 0.0% | 39.1% |
| 2007 | 2229 | 2,3,4,5 | 9.6% | 0.1% | 0.4% | 4.8% | 1.0% | 1.4% | 0.4% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 4.0% | 0.8% | 5.4% | 0.4% | 0.0% | 0.0% | 18.2% | 0.0% | 18.8% | 0.3% | 34.0% |
| 2008 | 4115 | 2,3,4,5 | 4.5% | 0.0% | 0.0% | 3.7% | 1.8% | 1.5% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 20.4% | 0.0% | 62.3% |
| 2009 | 3291 | 2,3,4,5 | 6.7% | 0.0% | 0.1% | 4.4% | 0.6% | 1.6% | 1.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.9% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 16.4% | 0.0% | 66.7% |
| 2010 | 4260 | 2,3,4,5 | 5.3% | 0.0% | 0.4% | 4.2% | 0.2% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.6% | 0.6% | 0.7% | 0.3% | 0.0% | 0.0% | 5.4% | 0.0% | 10.8% | 0.0% | 68.1% |
| 2011 | 1904 | 2,3,4,5 | 7.0% | 0.0% | 0.5% | 4.6% | 0.4% | 2.2% | 1.1% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 5.4% | 0.5% | 1.8% | 0.0% | 0.0% | 0.0% | 16.9% | 0.0% | 20.1% | 0.1% | 39.4% |
| 2012 | 2797 | 2,3,4,5 | 2.3% | 0.3% | 0.0% | 2.2% | 0.1% | 3.0% | 3.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 6.3% | 0.6% | 3.6% | 0.6% | 0.0% | 0.4% | 12.2% | 0.0% | 16.6% | 0.0% | 48.5% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 3052 | | 4.9% | 0.2% | 0.2% | 3.2% | 0.4% | 3.2% | 0.4% | 0.0% | 0.0% | 0.2% | 0.2% | 0.1% | 1.9% | 0.3% | 6.7% | 0.2% | 0.1% | 0.0% | 9.6% | 0.0% | 22.9% | 0.1% | 45.3% |
| 1979-1984 | 1969 | | 2.9% | 0.1% | 0.1% | 4.4% | 0.0% | 6.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.7% | 0.0% | 1.6% | 0.4% | 8.6% | 0.1% | 0.1% | 0.1% | 4.5% | 0.0% | 32.4% | 0.0% | 37.1% |
| 1985-1995 | 1471 | | 1.5% | 0.4% | 0.1% | 1.7% | 0.1% | 4.2% | 0.2% | 0.0% | 0.1% | 0.3% | 0.2% | 0.0% | 0.8% | 0.1% | 9.7% | 0.3% | 0.1% | 0.0% | 6.3% | 0.0% | 31.1% | 0.2% | 42.6% |
| 1996-1998 | 5020 | | 8.0% | 0.0% | 0.0% | 2.1% | 0.1% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.3% | 0.0% | 7.8% | 0.1% | 0.0% | 0.0% | 11.7% | 0.0% | 13.9% | 0.2% | 55.0% |
| 1999-2013 | 4181 | | 7.5% | 0.0% | 0.3% | 4.2% | 0.8% | 2.1% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 3.1% | 0.5% | 3.6% | 0.2% | 0.0% | 0.0% | 13.2% | 0.0% | 15.8% | 0.1% | 47.7% |

*Appendix C10. Percent distribution of Elwha River total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | 72 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | 273 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | 730 | 2,3,4 | 23.8% | 3.0% | 0.0% | 2.6% | 0.0% | 17.7% | 1.1% | 0.8% | 7.4% | 1.1% | 5.8% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 14.7% | 0.0% | 11.0% | 0.0% | 0.0% | 10.0% |
| 1987 | 476 | 2,3,4,5 | 16.2% | 0.0% | 0.0% | 5.0% | 0.0% | 15.8% | 2.3% | 0.8% | 10.5% | 2.5% | 5.3% | 0.0% | 2.5% | 0.0% | 0.4% | 0.0% | 0.0% | 19.7% | 0.0% | 5.5% | 0.0% | 0.2% | 13.2% |
| 1988 | 460 | 2,3,4,5 | 5.2% | 0.9% | 0.7% | 3.9% | 0.0% | 15.4% | 6.1% | 0.4% | 2.4% | 1.5% | 1.3% | 0.0% | 4.6% | 0.0% | 0.0% | 0.0% | 0.0% | 9.1% | 0.0% | 11.1% | 0.0% | 0.0% | 37.4% |
| 1989 | 300 | 3,4,5 | 6.3% | 5.7% | 0.0% | 4.3% | 2.0% | 6.0% | 0.0% | 0.0% | 0.0% | 3.0% | 0.0% | 0.0% | 2.7% | 0.3% | 0.0% | 0.0% | 0.0% | 14.0% | 0.0% | 10.7% | 0.0% | 0.0% | 45.0% |
| 1990 | 40 | 2,4,5 | 0.0% | 0.0% | 0.0% | 12.5% | 0.0% | 15.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.5% | 0.0% | 10.0% | 0.0% | 0.0% | 50.0% |
| 1991 | 24 | 2,3,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.7% | 0.0% | 0.0% | 4.2% | 0.0% | 4.2% | 0.0% | 8.3% | 0.0% | 0.0% | 0.0% | 0.0% | 12.5% | 0.0% | 54.2% | 0.0% | 0.0% | 0.0% |
| 1992 | 74 | 2,3,4 | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 35.1% | 4.1% | 1.4% | 4.1% | 0.0% | 8.1% | 0.0% | 12.2% | 0.0% | 0.0% | 0.0% | 0.0% | 31.1% | 0.0% | 0.0% | 0.0% | 0.0% | 2.7% |
| 1993 | 151 | 2,3,4,5 | 6.6% | 0.0% | 0.0% | 0.0% | 0.0% | 15.9% | 10.6% | 2.6% | 11.3% | 0.0% | 0.0% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 28.5% | 0.0% | 2.6% | 0.0% | 4.0% | 15.2% |
| 1994 | 88 | 2,3,4,5 | 8.0% | 0.0% | 0.0% | 9.1% | 0.0% | 18.2% | 0.0% | 4.5% | 4.5% | 0.0% | 8.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 47.7% |
| 1995 | 151 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 2.6% | 32.5% | 2.0% | 0.0% | 0.0% | 4.0% | 6.6% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 13.9% | 0.0% | 0.7% | 0.0% | 0.0% | 36.4% |
| 1996 | 316 | 2,3,4,5 | 4.1% | 0.0% | 0.0% | 1.6% | 0.0% | 1.6% | 3.2% | 0.0% | 3.8% | 0.0% | 2.8% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 7.3% | 0.0% | 0.0% | 0.6% | 0.0% | 74.4% |
| 1997 | 194 | 3,4,5 | 14.4% | 0.0% | 0.5% | 1.0% | 0.0% | 4.1% | 0.0% | 0.0% | 7.2% | 0.0% | 4.1% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.9% | 0.0% | 0.0% | 0.0% | 0.5% | 53.1% |
| 1998 | 173 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1999 | 27 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2000 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2001 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2002 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2004 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2005 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2006 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2007 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2008 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2009 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2010 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2011 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2012 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2013 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 250 |  | 7.1% | 0.8% | 0.1% | 3.5% | 0.4% | 16.2% | 2.4% | 0.9% | 4.6% | 1.0% | 3.8% | 0.0% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 14.8% | 0.0% | 8.8% | 0.1% | 0.4% | 32.1% |
| 1979-1984 | 0 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 249 |  | 6.6% | 1.0% | 0.1% | 3.9% | 0.5% | 18.8% | 2.6% | 1.1% | 4.4% | 1.2% | 3.9% | 0.0% | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 15.6% | 0.0% | 10.6% | 0.0% | 0.4% | 25.8% |
| 1996-1998 | 255 |  | 9.3% | 0.0% | 0.3% | 1.3% | 0.0% | 2.9% | 1.6% | 0.0% | 5.5% | 0.0% | 3.5% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 10.6% | 0.0% | 0.0% | 0.3% | 0.3% | 63.7% |
| 1999-2013 | 0 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

*Appendix C11. Percent distribution of George Adams Fall Fingerling total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | 70 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 411 | 2,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 714 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | 860 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.7% | 0.0% | 0.2% | 4.7% | 0.6% | 0.7% | 0.0% | 2.9% | 0.5% | 0.0% | 0.0% | 0.0% | 12.6% | 0.0% | 37.0% | 0.0% | 19.7% | 0.6% |
| 1983 | 943 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.0% | 0.3% | 0.0% | 3.8% | 1.3% | 4.0% | 0.0% | 0.1% | 0.5% | 0.0% | 0.0% | 0.0% | 40.9% | 0.0% | 26.4% | 0.0% | 8.7% | 1.9% |
| 1984 | 1069 | 3,4,5 | 0.0% | 0.1% | 0.0% | 0.6% | 0.0% | 18.0% | 0.0% | 1.2% | 5.0% | 3.2% | 1.8% | 0.0% | 2.2% | 0.4% | 0.2% | 0.0% | 0.0% | 22.5% | 0.0% | 30.5% | 0.0% | 10.0% | 4.6% |
| 1985 | 364 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | 18 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 248 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 941 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 2007 | 2,3,4 | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 10.0% | 1.7% | 0.0% | 4.3% | 0.0% | 4.2% | 0.0% | 12.5% | 0.5% | 0.2% | 0.2% | 0.0% | 17.4% | 0.0% | 36.7% | 1.4% | 0.3% | 9.8% |
| 1990 | 1550 | 2,3,4,5 | 0.7% | 0.0% | 0.0% | 0.4% | 0.0% | 21.1% | 4.6% | 0.0% | 5.0% | 0.3% | 1.5% | 0.0% | 15.4% | 0.4% | 0.0% | 0.0% | 0.0% | 18.1% | 0.0% | 26.3% | 0.3% | 0.1% | 5.7% |
| 1991 | 1050 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 19.3% | 4.5% | 0.0% | 2.4% | 0.0% | 0.3% | 0.0% | 8.2% | 0.0% | 0.4% | 0.0% | 0.0% | 18.5% | 0.0% | 31.9% | 0.9% | 0.4% | 13.1% |
| 1992 | 186 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.2% | 0.0% | 0.0% | 1.6% | 0.0% | 5.9% | 0.0% | 19.9% | 0.0% | 0.0% | 0.0% | 0.0% | 38.2% | 0.0% | 9.7% | 0.0% | 0.0% | 7.5% |
| 1993 | 126 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 31.0% | 8.7% | 1.6% | 4.0% | 0.0% | 0.0% | 0.0% | 8.7% | 0.0% | 0.0% | 0.0% | 0.0% | 24.6% | 0.0% | 4.8% | 0.0% | 0.8% | 15.9% |
| 1994 | 50 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.0% | 0.0% | 16.0% | 0.0% | 0.0% | 62.0% |
| 1995 | 266 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.4% | 3.8% | 0.0% | 5.6% | 0.0% | 3.4% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.4% | 28.2% | 0.0% | 3.4% | 0.0% | 1.1% | 44.0% |
| 1996 | 370 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 4.6% | 0.0% | 14.3% | 0.0% | 2.4% | 0.0% | 5.4% | 0.5% | 0.0% | 0.0% | 0.0% | 15.4% | 0.0% | 0.0% | 0.3% | 0.5% | 55.1% |
| 1997 | 398 | 2,3,4,5 | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.8% | 1.3% | 0.0% | 3.3% | 0.0% | 0.5% | 0.0% | 2.3% | 0.0% | 0.5% | 0.0% | 0.0% | 24.4% | 0.0% | 0.8% | 0.0% | 1.0% | 59.3% |
| 1998 | 593 | 2,3,4,5 | 0.7% | 0.2% | 0.0% | 0.0% | 0.0% | 0.2% | 1.2% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.2% | 27.5% | 0.0% | 1.7% | 0.0% | 0.3% | 64.8% |
| 1999 | 892 | 2,3,4,5 | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 9.2% | 0.0% | 3.0% | 0.0% | 0.0% | 0.0% | 4.1% | 1.3% | 1.5% | 0.0% | 0.0% | 12.9% | 0.0% | 2.8% | 0.0% | 0.1% | 63.8% |
| 2000 | 964 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.3% | 0.0% | 20.2% | 8.7% | 0.0% | 3.6% | 0.0% | 0.2% | 0.0% | 3.0% | 0.0% | 0.5% | 0.0% | 0.0% | 11.4% | 0.0% | 0.3% | 12.2% | 0.3% | 38.8% |
| 2001 | 906 | 2,3,4,5 | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 12.3% | 2.2% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 5.0% | 1.0% | 1.9% | 0.0% | 0.0% | 15.6% | 0.0% | 10.6% | 0.6% | 0.6% | 46.9% |
| 2002 | 1050 | 2,3,4,5 | 1.5% | 0.0% | 0.0% | 1.1% | 0.0% | 10.2% | 11.0% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 3.9% | 0.8% | 0.5% | 0.2% | 0.0% | 7.2% | 0.0% | 10.8% | 10.2% | 0.5% | 40.0% |
| 2003 | 1052 | 2,3,4,5 | 0.7% | 0.4% | 0.0% | 0.0% | 0.0% | 11.1% | 2.3% | 0.0% | 3.4% | 0.0% | 0.0% | 0.0% | 6.0% | 0.2% | 0.8% | 0.0% | 0.0% | 9.0% | 0.0% | 10.3% | 12.6% | 0.1% | 43.2% |
| 2004 | 1464 | 2,3,4,5 | 0.4% | 0.3% | 0.0% | 0.0% | 0.0% | 14.5% | 3.3% | 0.1% | 3.0% | 0.0% | 0.5% | 0.0% | 5.7% | 0.5% | 0.9% | 0.0% | 0.0% | 8.5% | 0.0% | 12.4% | 1.4% | 0.4% | 47.9% |
| 2005 | 1752 | 2,3,4,5 | 0.3% | 0.1% | 0.0% | 0.1% | 0.0% | 11.4% | 8.8% | 0.0% | 8.3% | 0.0% | 0.0% | 0.0% | 6.8% | 1.3% | 0.5% | 0.0% | 0.0% | 10.2% | 0.0% | 5.1% | 6.5% | 0.5% | 40.2% |
| 2006 | 1203 | 2,3,4,5 | 0.4% | 0.2% | 0.0% | 0.8% | 0.0% | 11.8% | 2.0% | 0.0% | 5.2% | 0.0% | 0.0% | 0.0% | 5.3% | 0.4% | 0.3% | 0.0% | 0.0% | 11.2% | 0.0% | 14.4% | 1.5% | 0.2% | 46.1% |
| 2007 | 2018 | 2,3,4,5 | 0.2% | 0.7% | 0.0% | 0.0% | 0.0% | 9.2% | 1.6% | 0.0% | 3.0% | 0.0% | 0.0% | 0.0% | 3.3% | 0.1% | 0.2% | 0.0% | 0.0% | 18.8% | 0.0% | 12.9% | 12.9% | 0.1% | 36.7% |
| 2008 | 1246 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.1% | 4.6% | 0.0% | 3.3% | 0.0% | 0.0% | 0.0% | 1.5% | 0.7% | 0.0% | 0.0% | 0.0% | 12.8% | 0.0% | 16.8% | 0.0% | 0.3% | 55.9% |
| 2009 | 1666 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 5.3% | 6.1% | 0.0% | 8.8% | 0.0% | 0.0% | 0.0% | 2.3% | 0.4% | 0.0% | 0.0% | 0.0% | 17.0% | 0.0% | 6.9% | 0.0% | 0.1% | 52.9% |
| 2010 | 1997 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 9.3% | 5.3% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 4.6% | 0.4% | 0.2% | 0.0% | 0.0% | 11.9% | 0.0% | 19.4% | 6.3% | 0.1% | 40.7% |
| 2011 | 3004 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 2.2% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 1.9% | 0.3% | 0.2% | 0.0% | 0.0% | 16.1% | 0.0% | 17.7% | 7.8% | 0.0% | 48.4% |
| 2012 | 3205 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.1% | 0.0% | 2.4% | 3.9% | 0.0% | 1.8% | 0.0% | 0.3% | 0.0% | 5.1% | 1.3% | 0.2% | 0.0% | 0.0% | 13.9% | 0.0% | 24.1% | 7.8% | 0.3% | 38.4% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 1181 | | 0.3% | 0.1% | 0.0% | 0.1% | 0.0% | 10.8% | 3.8% | 0.5% | 4.0% | 0.2% | 1.0% | 0.0% | 5.1% | 0.4% | 0.3% | 0.0% | 0.0% | 17.7% | 0.0% | 14.4% | 3.1% | 1.7% | 36.5% |
| 1979-1984 | 957 | | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 16.9% | 0.1% | 0.5% | 4.5% | 1.7% | 2.2% | 0.0% | 1.7% | 0.5% | 0.1% | 0.0% | 0.0% | 25.3% | 0.0% | 31.3% | 0.0% | 12.8% | 2.4% |
| 1985-1995 | 748 | | 0.1% | 0.1% | 0.0% | 0.1% | 0.0% | 15.4% | 3.3% | 1.7% | 3.3% | 0.1% | 2.2% | 0.0% | 9.3% | 0.1% | 0.1% | 0.0% | 0.1% | 22.4% | 0.0% | 18.4% | 0.4% | 0.4% | 22.6% |
| 1996-1998 | 454 | | 0.9% | 0.1% | 0.0% | 0.0% | 0.0% | 2.1% | 2.3% | 0.0% | 6.5% | 0.0% | 1.0% | 0.0% | 3.1% | 0.2% | 0.2% | 0.0% | 0.1% | 22.4% | 0.0% | 0.8% | 0.1% | 0.6% | 59.7% |
| 1999-2013 | 1601 | | 0.4% | 0.1% | 0.0% | 0.2% | 0.0% | 9.0% | 5.1% | 0.0% | 3.8% | 0.0% | 0.1% | 0.0% | 4.2% | 0.6% | 0.5% | 0.0% | 0.0% | 12.6% | 0.0% | 11.8% | 5.7% | 0.3% | 45.7% |

*Appendix C12. Percent distribution of Hanford Wild Brights total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 112 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 118 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | 476 | 2,3,4 | 9.2% | 0.8% | 0.2% | 5.0% | 0.0% | 8.8% | 3.6% | 0.0% | 0.0% | 0.4% | 0.6% | 0.0% | 0.6% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 23.3% | 6.3% | 0.0% | 40.1% |
| 1991 | 615 | 2,3,4,5 | 10.7% | 0.0% | 1.5% | 10.6% | 0.5% | 5.2% | 0.0% | 0.0% | 1.0% | 0.2% | 0.0% | 0.0% | 0.5% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 0.0% | 22.6% | 3.7% | 0.0% | 42.6% |
| 1992 | 367 | 2,3,4,5 | 16.1% | 15.3% | 1.4% | 6.0% | 0.0% | 15.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 15.0% | 1.4% | 0.0% | 27.8% |
| 1993 | 418 | 2,3,4,5 | 18.9% | 0.0% | 2.2% | 3.1% | 1.2% | 6.0% | 1.9% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 3.6% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 15.1% | 7.2% | 1.2% | 36.6% |
| 1994 | 772 | 2,3,4,5 | 17.1% | 3.1% | 0.0% | 5.4% | 0.0% | 4.7% | 0.0% | 0.0% | 0.0% | 0.3% | 1.3% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 12.2% | 0.0% | 49.9% |
| 1995 | 690 | 2,3,4,5 | 13.3% | 0.0% | 4.2% | 5.5% | 0.0% | 2.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.4% | 7.0% | 0.0% | 57.7% |
| 1996 | 628 | 2,3,4,5 | 13.1% | 0.0% | 0.0% | 0.8% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 27.4% | 7.8% | 0.0% | 49.7% |
| 1997 | 649 | 2,3,4,5 | 16.8% | 1.1% | 1.1% | 3.1% | 3.1% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 13.9% | 7.1% | 0.0% | 52.2% |
| 1998 | 335 | 2,3,4,5 | 13.7% | 0.0% | 0.0% | 11.3% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.3% | 6.9% | 0.0% | 50.1% |
| 1999 | 279 | 2,3,4,5 | 13.6% | 0.4% | 2.2% | 12.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.8% | 5.7% | 0.0% | 53.4% |
| 2000 | 232 | 2,3,4,5 | 20.7% | 0.4% | 2.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 28.4% | 5.2% | 0.0% | 43.1% |
| 2001 | 361 | 2,3,4,5 | 5.8% | 0.6% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 21.3% | 15.0% | 0.0% | 54.8% |
| 2002 | 897 | 2,3,4,5 | 17.9% | 0.0% | 1.4% | 0.8% | 0.6% | 2.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.7% | 0.2% | 0.0% | 0.0% | 0.0% | 9.7% | 10.8% | 2.0% | 52.3% |
| 2003 | 1547 | 2,3,4,5 | 13.6% | 0.0% | 0.9% | 4.1% | 1.1% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 13.9% | 9.2% | 0.0% | 55.9% |
| 2004 | 1901 | 2,3,4,5 | 18.7% | 2.1% | 3.0% | 6.5% | 3.3% | 2.8% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.2% | 0.3% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 13.2% | 4.0% | 0.0% | 45.4% |
| 2005 | 464 | 2,3,4,5 | 13.1% | 0.0% | 0.0% | 8.8% | 3.0% | 4.1% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 1.1% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 12.1% | 15.5% | 0.0% | 38.8% |
| 2006 | 566 | 2,3,4,5 | 19.1% | 0.0% | 0.9% | 5.1% | 0.0% | 2.7% | 2.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 14.7% | 19.4% | 0.0% | 35.0% |
| 2007 | 314 | 2,3,4,5 | 23.2% | 0.0% | 1.0% | 7.0% | 7.3% | 2.5% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.6% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 6.7% | 16.9% | 0.0% | 32.8% |
| 2008 | 222 | 2,3,4,5 | 33.8% | 0.0% | 5.4% | 1.4% | 1.8% | 3.2% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.6% | 7.2% | 0.9% | 27.0% |
| 2009 | 231 | 2,3,4,5 | 21.6% | 0.0% | 0.9% | 3.9% | 2.2% | 1.3% | 5.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 48.9% | 4.3% | 0.0% | 11.3% |
| 2010 | 504 | 2,3,4,5 | 16.3% | 0.0% | 4.6% | 8.3% | 3.6% | 0.8% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.6% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 11.1% | 4.6% | 4.4% | 42.7% |
| 2011 | 566 | 2,3,4,5 | 20.7% | 0.7% | 0.0% | 1.8% | 5.3% | 2.3% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.7% | 0.9% | 0.0% | 0.0% | 0.0% | 22.1% | 8.3% | 0.0% | 35.9% |
| 2012 | 600 | 3,4,5 | 14.0% | 0.8% | 1.2% | 4.7% | 2.0% | 5.8% | 5.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.7% | 0.3% | 0.5% | 0.8% | 0.0% | 0.5% | 0.0% | 17.5% | 18.3% | 0.0% | 23.5% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 593 | | 16.6% | 1.1% | 1.5% | 5.0% | 1.5% | 3.2% | 1.0% | 0.0% | 0.1% | 0.0% | 0.3% | 0.0% | 0.7% | 0.2% | 0.3% | 0.1% | 0.0% | 0.1% | 0.0% | 17.3% | 8.9% | 0.4% | 41.7% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 556 | | 14.2% | 3.2% | 1.6% | 5.9% | 0.3% | 7.2% | 0.9% | 0.0% | 0.2% | 0.1% | 0.7% | 0.0% | 0.9% | 0.3% | 0.2% | 0.1% | 0.0% | 0.2% | 0.0% | 15.1% | 6.3% | 0.2% | 42.4% |
| 1996-1998 | 537 | | 14.5% | 0.4% | 0.4% | 5.1% | 1.2% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 19.5% | 7.3% | 0.0% | 50.7% |
| 1999-2013 | 620 | | 18.0% | 0.4% | 1.8% | 4.7% | 2.1% | 2.0% | 1.3% | 0.0% | 0.1% | 0.0% | 0.1% | 0.0% | 0.8% | 0.2% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 17.8% | 10.3% | 0.5% | 39.4% |

*Appendix C13. Percent distribution of Harrison River (Fraser Late) total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | 873 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | 2395 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | 1623 | 2,3,4 | 0.2% | 0.0% | 0.0% | 1.1% | 0.0% | 24.6% | 0.7% | 8.3% | 26.1% | 1.8% | 4.0% | 0.0% | 1.0% | 0.2% | 0.2% | 0.0% | 3.3% | 3.5% | 0.0% | 1.5% | 0.4% | 0.0% | 23.0% |
| 1986 | 928 | 2,3,4,5 | 1.6% | 0.0% | 0.0% | 0.4% | 0.0% | 18.2% | 0.4% | 19.5% | 24.2% | 2.8% | 5.4% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 4.2% | 0.0% | 6.4% | 0.0% | 0.0% | 15.8% |
| 1987 | 543 | 2,3,4,5 | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 10.1% | 0.0% | 9.6% | 28.2% | 0.6% | 2.4% | 0.0% | 3.5% | 0.4% | 0.0% | 0.0% | 10.5% | 2.4% | 0.0% | 3.1% | 0.9% | 0.0% | 27.4% |
| 1988 | 1392 | 2,3,4,5 | 0.5% | 0.0% | 0.7% | 0.0% | 0.0% | 4.1% | 3.4% | 11.7% | 37.1% | 1.2% | 4.3% | 0.0% | 4.0% | 0.0% | 0.9% | 0.0% | 14.1% | 6.4% | 0.0% | 2.0% | 0.4% | 0.0% | 9.1% |
| 1989 | 2374 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.3% | 0.0% | 24.9% | 1.0% | 5.5% | 23.7% | 0.7% | 3.4% | 0.0% | 5.6% | 0.2% | 0.9% | 0.0% | 5.1% | 4.8% | 0.0% | 2.2% | 0.0% | 0.0% | 21.4% |
| 1990 | 2912 | 2,3,4,5 | 0.5% | 0.0% | 0.0% | 0.8% | 0.0% | 20.0% | 1.2% | 4.4% | 11.8% | 0.7% | 1.5% | 0.0% | 6.0% | 0.1% | 0.0% | 0.0% | 4.3% | 5.9% | 0.0% | 1.3% | 0.3% | 0.0% | 41.1% |
| 1991 | 1594 | 2,3,4,5 | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 29.5% | 0.0% | 8.9% | 13.6% | 0.3% | 4.3% | 0.0% | 11.1% | 0.0% | 1.0% | 0.0% | 2.9% | 4.8% | 0.0% | 1.3% | 0.4% | 0.0% | 21.9% |
| 1992 | 1676 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 18.7% | 0.0% | 13.4% | 12.5% | 0.1% | 1.3% | 0.0% | 11.3% | 0.0% | 0.3% | 0.0% | 1.2% | 7.2% | 0.0% | 0.7% | 0.0% | 0.2% | 32.6% |
| 1993 | 1138 | 2,3,4,5 | 1.1% | 0.0% | 0.0% | 0.3% | 0.0% | 19.2% | 0.0% | 6.6% | 7.3% | 0.4% | 0.9% | 0.0% | 9.1% | 0.0% | 1.0% | 0.0% | 0.5% | 2.1% | 0.0% | 2.0% | 0.0% | 0.0% | 49.6% |
| 1994 | 451 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.8% | 2.0% | 8.9% | 6.7% | 0.0% | 3.3% | 0.0% | 2.2% | 0.0% | 0.9% | 0.0% | 3.5% | 2.2% | 0.0% | 1.8% | 0.0% | 0.9% | 48.8% |
| 1995 | 359 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.4% | 1.4% | 0.0% | 20.6% | 0.0% | 3.1% | 0.0% | 7.8% | 0.6% | 1.1% | 0.0% | 6.1% | 4.5% | 0.0% | 2.5% | 0.8% | 5.6% | 24.5% |
| 1996 | 1104 | 2,3,4,5 | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 1.6% | 0.2% | 0.0% | 23.2% | 0.0% | 0.5% | 0.0% | 3.7% | 0.0% | 0.6% | 0.0% | 0.0% | 7.9% | 0.0% | 0.4% | 0.4% | 0.1% | 61.2% |
| 1997 | 863 | 2,3,4,5 | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 12.9% | 3.6% | 0.1% | 19.2% | 0.0% | 1.4% | 0.0% | 6.8% | 0.0% | 2.8% | 0.0% | 3.4% | 6.4% | 0.0% | 2.2% | 0.0% | 0.0% | 39.7% |
| 1998 | 1153 | 2,3,4,5 | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% | 4.2% | 0.0% | 1.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.3% | 0.0% | 0.9% | 87.9% |
| 1999 | 1305 | 2,3,4,5 | 0.2% | 0.5% | 0.0% | 0.5% | 0.0% | 0.6% | 1.8% | 0.0% | 9.3% | 0.2% | 0.0% | 0.0% | 12.9% | 0.4% | 0.8% | 0.0% | 0.8% | 0.6% | 0.0% | 0.6% | 0.2% | 0.8% | 69.7% |
| 2000 | 665 | 2,3,4,5 | 1.5% | 0.0% | 0.0% | 0.5% | 0.0% | 11.9% | 3.8% | 0.0% | 9.9% | 0.0% | 0.0% | 0.0% | 11.4% | 0.0% | 1.8% | 0.0% | 0.8% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 57.7% |
| 2001 | 838 | 2,3,4,5 | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 6.7% | 2.4% | 0.0% | 6.9% | 0.0% | 0.0% | 0.0% | 6.1% | 1.8% | 1.6% | 0.0% | 0.1% | 3.1% | 0.0% | 1.7% | 0.0% | 0.6% | 68.7% |
| 2002 | 383 | 2,3,4,5 | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 12.0% | 2.9% | 0.0% | 10.7% | 0.0% | 7.0% | 0.0% | 13.6% | 1.6% | 0.5% | 0.0% | 3.4% | 2.6% | 0.0% | 1.0% | 0.0% | 0.3% | 43.9% |
| 2003 | 574 | 2,3,4,5 | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 7.8% | 3.8% | 0.0% | 4.7% | 0.0% | 0.0% | 0.0% | 7.0% | 1.2% | 0.0% | 0.0% | 0.3% | 1.4% | 0.0% | 1.6% | 0.0% | 0.3% | 70.6% |
| 2004 | 560 | 2,3,4,5 | 1.3% | 0.0% | 0.0% | 0.9% | 0.0% | 18.2% | 6.4% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 16.4% | 0.5% | 0.0% | 0.0% | 0.2% | 3.2% | 0.0% | 2.5% | 0.0% | 0.0% | 49.5% |
| 2005 | 729 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 14.3% | 3.8% | 0.0% | 7.3% | 0.0% | 0.0% | 0.0% | 6.2% | 2.6% | 0.3% | 0.0% | 0.5% | 0.5% | 0.0% | 5.2% | 0.0% | 1.2% | 57.8% |
| 2006 | 412 | 3,4,5 | 1.2% | 0.0% | 0.0% | 0.5% | 0.0% | 20.1% | 6.3% | 0.0% | 2.9% | 0.0% | 0.0% | 0.0% | 13.6% | 1.0% | 1.2% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 52.7% |
| 2007 | 853 | 2,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.7% | 1.9% | 0.0% | 3.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.1% | 0.0% | 0.0% | 0.5% | 1.2% | 0.0% | 0.1% | 0.0% | 0.0% | 81.2% |
| 2008 | 808 | 2,3,5 | 0.4% | 0.2% | 0.0% | 0.0% | 0.0% | 27.1% | 12.0% | 0.0% | 6.4% | 0.0% | 0.1% | 0.0% | 5.2% | 1.2% | 0.0% | 0.0% | 2.1% | 1.6% | 0.0% | 0.5% | 0.0% | 0.0% | 43.1% |
| 2009 | 2207 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 1.4% | 3.7% | 0.0% | 4.7% | 0.0% | 0.0% | 0.0% | 1.2% | 0.2% | 0.0% | 0.0% | 0.4% | 1.8% | 0.0% | 1.6% | 1.0% | 0.0% | 83.6% |
| 2010 | 2025 | 2,3,4,5 | 0.6% | 0.0% | 0.0% | 0.1% | 0.0% | 3.9% | 4.2% | 0.0% | 5.6% | 0.0% | 0.0% | 0.2% | 4.0% | 1.1% | 0.0% | 0.0% | 0.7% | 2.0% | 0.0% | 1.1% | 0.3% | 0.0% | 76.0% |
| 2011 | 2738 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.1% | 0.4% | 3.3% | 6.3% | 0.0% | 4.1% | 0.0% | 0.0% | 0.1% | 3.1% | 0.6% | 0.0% | 0.0% | 0.5% | 2.1% | 0.0% | 2.5% | 0.0% | 0.0% | 76.4% |
| 2012 | 2129 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 1.0% | 0.0% | 10.8% | 0.0% | 0.0% | 0.0% | 3.1% | 0.4% | 0.2% | 0.0% | 0.3% | 5.3% | 0.0% | 0.5% | 0.9% | 0.0% | 76.0% |
| 2013 | 3551 | 2,3,4,5 | 0.0% | 0.1% | 0.1% | 0.0% | 0.1% | 1.8% | 2.0% | 0.0% | 8.5% | 0.0% | 0.0% | 0.1% | 7.3% | 0.8% | 0.3% | 0.0% | 0.5% | 3.0% | 0.0% | 1.1% | 0.5% | 1.2% | 72.7% |
| 1979-2013 | 1306 | | 0.5% | 0.0% | 0.0% | 0.2% | 0.0% | 12.6% | 2.6% | 3.3% | 12.2% | 0.3% | 1.5% | 0.0% | 6.5% | 0.5% | 0.6% | 0.0% | 2.3% | 3.2% | 0.0% | 1.6% | 0.2% | 0.4% | 51.2% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 1363 | | 0.5% | 0.0% | 0.1% | 0.3% | 0.0% | 19.1% | 0.9% | 8.8% | 19.3% | 0.8% | 3.1% | 0.0% | 5.6% | 0.1% | 0.6% | 0.0% | 4.7% | 4.4% | 0.0% | 2.3% | 0.3% | 0.6% | 28.7% |
| 1996-1998 | 1040 | | 0.8% | 0.1% | 0.0% | 0.0% | 0.0% | 5.0% | 1.3% | 0.0% | 15.4% | 0.0% | 0.6% | 0.0% | 4.9% | 0.0% | 1.5% | 0.0% | 1.2% | 4.9% | 0.0% | 0.9% | 0.1% | 0.3% | 62.9% |
| 1999-2013 | 1318 | | 0.5% | 0.1% | 0.0% | 0.2% | 0.0% | 9.4% | 4.2% | 0.0% | 6.4% | 0.0% | 0.5% | 0.0% | 7.5% | 0.9% | 0.4% | 0.0% | 0.7% | 2.0% | 0.0% | 1.3% | 0.2% | 0.3% | 65.3% |

*Appendix C14. Percent distribution of Hoko Fall Fingerling total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 10 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 138 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 354 | 2,3,4 | 11.6% | 2.5% | 0.3% | 8.5% | 0.0% | 13.6% | 0.0% | 0.0% | 1.7% | 1.1% | 15.8% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 1.4% | 21.5% | 0.0% | 0.0% | 0.0% | 0.3% | 20.6% |
| 1990 | 677 | 3,4,5 | 18.2% | 3.8% | 0.6% | 8.6% | 0.0% | 17.1% | 0.0% | 0.4% | 0.3% | 0.9% | 3.7% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.6% | 14.5% | 0.0% | 0.0% | 0.0% | 0.3% | 30.4% |
| 1991 | 1328 | 2,4,5,6 | 18.1% | 0.0% | 0.1% | 5.2% | 0.4% | 7.1% | 0.5% | 0.0% | 0.4% | 1.1% | 0.9% | 0.2% | 0.2% | 0.1% | 0.0% | 0.0% | 0.9% | 8.8% | 0.0% | 0.0% | 0.0% | 0.2% | 55.9% |
| 1992 | 669 | 2,3,5,6 | 8.1% | 10.2% | 1.5% | 5.4% | 0.6% | 9.7% | 1.9% | 0.0% | 0.6% | 1.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 0.0% | 0.0% | 0.3% | 56.8% |
| 1993 | 346 | 2,3,4,6 | 11.3% | 1.2% | 2.3% | 7.5% | 0.0% | 15.0% | 0.0% | 0.0% | 0.9% | 0.0% | 4.6% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 4.3% | 0.0% | 0.0% | 0.0% | 0.3% | 52.0% |
| 1994 | 402 | 2,3,4,5 | 19.4% | 7.7% | 2.5% | 12.9% | 0.0% | 10.2% | 1.7% | 0.0% | 1.7% | 0.5% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 38.6% |
| 1995 | 827 | 2,3,4,5,6 | 15.8% | 0.0% | 4.7% | 7.9% | 0.6% | 3.9% | 0.0% | 0.0% | 0.8% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.5% | 64.4% |
| 1996 | 685 | 2,3,4,5,6 | 14.0% | 0.0% | 4.4% | 0.6% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 78.4% |
| 1997 | 916 | 2,3,4,5,6 | 16.4% | 0.0% | 0.0% | 1.5% | 0.0% | 1.1% | 0.5% | 0.0% | 0.0% | 0.2% | 0.1% | 0.4% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.7% | 74.6% |
| 1998 | 1154 | 2,3,4,5,6 | 9.5% | 0.0% | 0.3% | 7.2% | 0.0% | 0.0% | 0.3% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 82.1% |
| 1999 | 770 | 2,3,4,5,6 | 7.8% | 0.0% | 0.6% | 7.8% | 1.3% | 0.0% | 1.3% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 80.5% |
| 2000 | 521 | 2,3,4,5,6 | 6.0% | 0.2% | 2.9% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 88.5% |
| 2001 | 541 | 2,3,4,5,6 | 8.5% | 0.0% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 85.2% |
| 2002 | 705 | 2,3,4,5,6 | 19.9% | 0.0% | 0.9% | 4.8% | 3.1% | 1.4% | 0.0% | 0.0% | 2.1% | 0.3% | 0.0% | 0.3% | 0.0% | 0.7% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 65.2% |
| 2003 | 979 | 2,3,4,5,6 | 14.8% | 0.1% | 2.9% | 3.3% | 0.0% | 0.0% | 0.6% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 76.1% |
| 2004 | 1087 | 2,3,4,5,6 | 12.6% | 0.0% | 1.2% | 9.6% | 2.1% | 0.6% | 0.9% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.4% | 69.2% |
| 2005 | 638 | 2,3,4,5,6 | 13.6% | 0.2% | 1.3% | 11.9% | 1.9% | 0.0% | 1.3% | 0.0% | 8.5% | 0.0% | 0.0% | 1.4% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.3% | 58.5% |
| 2006 | 796 | 2,3,4,5,6 | 10.7% | 1.4% | 2.4% | 6.4% | 2.5% | 0.0% | 1.4% | 0.0% | 0.8% | 0.0% | 0.0% | 1.1% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 72.1% |
| 2007 | 302 | 2,3,4,5,6 | 16.6% | 0.3% | 4.3% | 7.3% | 6.0% | 0.7% | 0.0% | 0.0% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 61.3% |
| 2008 | 94 | 2,3,4,5,6 | 20.2% | 0.0% | 6.4% | 7.4% | 17.0% | 0.0% | 0.0% | 0.0% | 4.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 44.7% |
| 2009 | 349 | 2,3,4,5,6 | 12.3% | 0.0% | 0.0% | 8.3% | 1.1% | 0.0% | 1.4% | 0.0% | 4.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 69.9% |
| 2010 | 714 | 2,3,4,5,6 | 2.4% | 0.0% | 2.4% | 4.9% | 0.7% | 0.7% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 86.3% |
| 2011 | 1113 | 2,3,4,5,6 | 10.3% | 0.9% | 0.9% | 2.3% | 1.1% | 1.1% | 0.8% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 17.1% | 63.7% |
| 2012 | 573 | 2,3,4,5,6 | 8.2% | 2.1% | 2.1% | 10.3% | 3.1% | 0.7% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 0.3% | 0.0% | 0.0% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 0.3% | 65.4% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 689 | | 12.8% | 1.3% | 2.0% | 6.2% | 1.7% | 3.5% | 0.7% | 0.0% | 1.5% | 0.2% | 1.2% | 0.1% | 0.2% | 0.2% | 0.0% | 0.0% | 0.1% | 2.6% | 0.0% | 0.0% | 0.0% | 1.3% | 64.2% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 658 | | 14.6% | 3.6% | 1.7% | 8.0% | 0.2% | 10.9% | 0.6% | 0.1% | 0.9% | 0.7% | 4.3% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.4% | 7.5% | 0.0% | 0.0% | 0.0% | 0.5% | 45.5% |
| 1996-1998 | 918 | | 13.3% | 0.0% | 1.6% | 3.1% | 0.0% | 0.8% | 0.3% | 0.0% | 0.1% | 0.1% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 78.4% |
| 1999-2013 | 656 | | 11.7% | 0.4% | 2.2% | 6.0% | 2.9% | 0.4% | 0.8% | 0.0% | 2.1% | 0.0% | 0.0% | 0.2% | 0.3% | 0.2% | 0.1% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 1.5% | 70.5% |

*Appendix C15. Percent distribution of Kitsumkalum River Summer (North/Central BC) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | 9 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | 28 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984[1] | 80 | 3,4,5 | 56.3% | 0.0% | 0.0% | 18.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.0% | 0.0% | 0.0% | 0.0% |
| 1985 | 195 | 4,5,6 | 29.2% | 0.0% | 1.5% | 7.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.8% | 0.0% | 0.0% | 48.7% |
| 1986 | 216 | 3,5,6 | 10.2% | 0.0% | 0.0% | 13.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.9% | 2.3% | 0.0% | 64.8% |
| 1987 | 264 | 3,4,6 | 13.3% | 0.0% | 2.7% | 9.8% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.2% | 4.2% | 0.0% | 62.5% |
| 1988 | 202 | 3,4,5 | 24.3% | 1.5% | 5.0% | 7.4% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.3% | 5.9% | 0.0% | 37.1% |
| 1989 | 851 | 3,4,5,6 | 14.2% | 0.7% | 6.9% | 5.2% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.6% | 5.2% | 0.0% | 55.6% |
| 1990 | 636 | 3,4,5,6 | 11.8% | 0.0% | 3.1% | 7.9% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.8% | 7.5% | 0.0% | 61.8% |
| 1991 | 336 | 3,4,5,6 | 19.9% | 0.0% | 4.2% | 10.7% | 3.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.6% | 9.2% | 0.0% | 36.6% |
| 1992 | 691 | 3,4,5,6 | 15.2% | 0.0% | 1.9% | 8.0% | 3.6% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.1% | 3.0% | 0.0% | 58.8% |
| 1993 | 241 | 3,4,5,6 | 11.6% | 2.1% | 2.1% | 11.2% | 2.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.8% | 1.2% | 0.0% | 51.0% |
| 1994 | 131 | 3,4,5,6 | 13.7% | 0.0% | 0.0% | 6.1% | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.3% | 2.3% | 0.0% | 55.7% |
| 1995 | 202 | 3,4,5,6 | 13.4% | 0.0% | 3.5% | 10.4% | 2.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.7% | 5.0% | 0.0% | 38.6% |
| 1996 | 539 | 3,4,5,6 | 10.8% | 0.2% | 6.9% | 0.2% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.4% | 4.5% | 0.0% | 59.7% |
| 1997 | 648 | 3,4,5,6 | 12.2% | 0.0% | 9.1% | 0.0% | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.7% | 7.1% | 0.0% | 60.3% |
| 1998 | 506 | 3,4,5,6 | 10.7% | 0.0% | 3.4% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 5.3% | 0.0% | 79.1% |
| 1999 | 729 | 3,4,5,6 | 12.8% | 0.0% | 10.2% | 0.0% | 11.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 2.1% | 0.0% | 61.6% |
| 2000 | 354 | 3,4,5,6 | 9.0% | 0.0% | 10.2% | 0.0% | 8.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.1% | 3.4% | 0.0% | 62.1% |
| 2001 | 563 | 3,4,5,6 | 12.3% | 0.0% | 10.3% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.1% | 7.6% | 0.0% | 59.0% |
| 2002 | 1041 | 3,4,5,6 | 14.4% | 0.4% | 6.1% | 1.5% | 6.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 2.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.2% | 4.7% | 0.0% | 61.0% |
| 2003 | 636 | 3,4,5,6 | 16.0% | 0.0% | 1.9% | 5.8% | 2.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 6.6% | 0.0% | 66.4% |
| 2004 | 947 | 3,4,5,6 | 8.0% | 3.4% | 5.3% | 0.8% | 10.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 1.1% | 0.4% | 69.2% |
| 2005 | 308 | 3,4,5,6 | 18.8% | 0.0% | 3.2% | 3.2% | 8.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.8% | 0.0% | 59.4% |
| 2006 | 309 | 3,4,5,6 | 14.2% | 3.9% | 1.9% | 2.9% | 6.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.1% | 5.2% | 0.0% | 59.2% |
| 2007 | 543 | 3,4,5,6 | 13.8% | 0.9% | 3.1% | 1.7% | 6.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 3.7% | 0.0% | 68.1% |
| 2008 | 533 | 3,4,5,6 | 7.1% | 0.2% | 2.1% | 2.6% | 6.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.8% | 21.0% | 0.0% | 48.2% |
| 2009 | 706 | 3,4,5,6 | 13.0% | 2.7% | 5.4% | 1.3% | 4.2% | 0.4% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 3.5% | 0.0% | 68.4% |
| 2010 | 1011 | 3,4,5,6 | 5.3% | 0.4% | 4.1% | 2.4% | 5.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 9.5% | 0.0% | 70.7% |
| 2011 | 540 | 3,4,5,6 | 12.2% | 0.0% | 0.9% | 1.9% | 3.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.7% | 12.2% | 0.0% | 61.9% |
| 2012 | 294 | 3,4,5,6 | 14.6% | 1.0% | 2.0% | 1.0% | 4.4% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 5.8% | 0.0% | 68.4% |
| 2013 | 230 | 4,5,6 | 10.4% | 0.0% | 3.5% | 5.7% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 10.0% | 0.0% | 68.7% |
| 1979-2013 | 483 | | 15.0% | 0.6% | 4.0% | 5.0% | 3.7% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.5% | 5.5% | 0.0% | 57.4% |
| 1979-1984 | 80 | | 56.3% | 0.0% | 0.0% | 18.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 360 | | 16.1% | 0.4% | 2.8% | 8.9% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.6% | 4.2% | 0.0% | 51.9% |
| 1996-1998 | 564 | | 11.2% | 0.1% | 6.4% | 0.1% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.8% | 5.6% | 0.0% | 66.4% |
| 1999-2013 | 583 | | 12.1% | 0.9% | 4.7% | 2.1% | 5.8% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.6% | 6.9% | 0.0% | 63.5% |

[1] Estimates for this year can only be used for distribution of fishing mortalities because the escapement data are insufficient.

### *Appendix C16. Percent distribution of Lower River Hatchery Tule (Lower Bonneville Hatchery) total fishing mortalities among fisheries and escapement.*

| Catch | Estimated | Ages | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # of | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 168 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 676 | 2,3,4 | 0.4% | 0.0% | 0.0% | 0.1% | 0.0% | 28.8% | 1.0% | 0.0% | 2.8% | 0.7% | 5.3% | 0.0% | 20.3% | 8.4% | 3.3% | 0.4% | 2.8% | 9.3% | 0.0% | 4.7% | 0.0% | 0.0% | 11.4% |
| 1981 | 3215 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 31.9% | 0.3% | 0.0% | 1.8% | 0.5% | 2.3% | 0.0% | 21.3% | 7.9% | 3.3% | 0.1% | 0.5% | 3.8% | 0.0% | 1.4% | 0.2% | 0.1% | 24.6% |
| 1982 | 3559 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 27.3% | 0.5% | 0.0% | 0.9% | 1.9% | 0.3% | 0.0% | 17.4% | 7.4% | 3.2% | 0.3% | 1.3% | 1.5% | 0.0% | 14.2% | 0.1% | 0.0% | 23.7% |
| 1983 | 2042 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 36.3% | 0.4% | 0.0% | 1.9% | 2.4% | 0.8% | 0.0% | 12.1% | 4.3% | 0.2% | 0.0% | 0.4% | 5.3% | 0.0% | 6.2% | 0.0% | 0.5% | 29.0% |
| 1984 | 1633 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 51.5% | 0.2% | 0.5% | 0.9% | 3.4% | 1.5% | 0.0% | 3.9% | 1.1% | 2.4% | 0.2% | 0.4% | 1.3% | 0.0% | 11.0% | 1.5% | 0.4% | 19.8% |
| 1985 | 1107 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 30.1% | 0.7% | 0.0% | 1.1% | 0.8% | 1.5% | 0.0% | 13.1% | 3.2% | 4.7% | 0.7% | 0.0% | 1.5% | 0.0% | 4.2% | 0.5% | 0.1% | 37.8% |
| 1986 | 2183 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.7% | 2.2% | 0.0% | 13.1% | 0.0% | 5.9% | 0.0% | 3.1% | 1.3% | 2.3% | 0.3% | 0.0% | 19.4% | 0.0% | 11.5% | 3.8% | 0.2% | 29.1% |
| 1987 | 9059 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 33.0% | 2.2% | 0.0% | 0.4% | 1.9% | 0.2% | 0.0% | 10.9% | 2.9% | 6.4% | 0.7% | 0.4% | 1.5% | 0.0% | 18.2% | 3.4% | 0.3% | 17.3% |
| 1988 | 2690 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.3% | 0.0% | 31.8% | 2.4% | 0.0% | 1.0% | 0.6% | 0.0% | 0.0% | 8.7% | 0.8% | 3.1% | 0.1% | 0.3% | 0.5% | 0.0% | 22.9% | 1.8% | 1.5% | 24.0% |
| 1989 | 275 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.1% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 14.5% | 1.5% | 10.2% | 0.7% | 0.0% | 2.5% | 0.0% | 5.5% | 0.7% | 0.0% | 45.5% |
| 1990 | 322 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 23.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.9% | 0.0% | 14.6% | 6.2% | 3.7% | 0.9% | 0.0% | 1.9% | 0.0% | 0.3% | 2.5% | 0.3% | 44.7% |
| 1991 | 510 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.8% | 2.4% | 0.0% | 2.0% | 0.2% | 2.4% | 0.0% | 8.2% | 2.9% | 2.5% | 1.6% | 0.4% | 2.5% | 0.0% | 2.5% | 10.4% | 0.0% | 50.2% |
| 1992 | 1324 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 19.7% | 1.8% | 0.0% | 0.0% | 0.6% | 0.8% | 0.0% | 24.9% | 3.8% | 5.3% | 1.4% | 0.0% | 2.1% | 0.0% | 0.8% | 3.3% | 0.4% | 35.0% |
| 1993 | 529 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.0% | 4.3% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 15.1% | 2.3% | 5.7% | 0.2% | 0.0% | 4.5% | 0.0% | 1.9% | 4.2% | 0.8% | 39.3% |
| 1994 | 31 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 29.0% | 0.0% | 0.0% | 12.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.5% | 51.6% |
| 1995 | 30 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.3% | 10.0% | 0.0% | 86.7% |
| 1996 | 67 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.0% | 1.5% | 6.0% | 73.1% |
| 1997 | 225 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.8% | 3.6% | 0.0% | 3.1% | 0.0% | 0.0% | 0.0% | 3.1% | 3.1% | 5.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 7.6% | 9.3% | 42.2% |
| 1998 | 114 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 10.5% | 0.0% | 0.0% | 0.0% | 0.0% | 4.4% | 0.9% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 21.9% | 0.9% | 57.0% |
| 1999 | 335 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 9.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.5% | 1.5% | 3.3% | 1.8% | 0.0% | 0.0% | 0.0% | 3.6% | 6.6% | 10.1% | 57.3% |
| 2000 | 282 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.3% | 12.4% | 0.0% | 4.3% | 0.0% | 0.0% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 3.5% | 0.0% | 2.5% | 3.2% | 9.2% | 46.5% |
| 2001 | 1233 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.3% | 2.4% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 7.8% | 2.8% | 13.0% | 0.8% | 0.1% | 1.1% | 0.0% | 1.4% | 4.7% | 9.0% | 48.4% |
| 2002 | 2033 | 2,3,4,5 | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 9.0% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.4% | 5.7% | 3.6% | 1.6% | 0.1% | 0.0% | 0.0% | 7.5% | 2.7% | 6.5% | 42.6% |
| 2003 | 2129 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.2% | 5.7% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 10.9% | 5.9% | 3.8% | 0.2% | 0.0% | 0.8% | 0.0% | 6.1% | 2.0% | 5.1% | 46.0% |
| 2004 | 1624 | 2,3,4,5 | 0.5% | 0.0% | 0.0% | 0.3% | 0.0% | 21.2% | 8.8% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 4.5% | 3.4% | 4.0% | 0.1% | 0.0% | 0.1% | 0.0% | 15.5% | 1.2% | 10.2% | 29.4% |
| 2005 | 618 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 29.3% | 7.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.2% | 2.1% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 15.4% | 0.2% | 9.4% | 29.1% |
| 2006 | 88 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.9% | 15.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.1% | 1.1% | 2.3% | 53.4% |
| 2007 | 164 | 2,3,4,5 | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 11.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.7% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.9% | 3.0% | 0.0% | 71.3% |
| 2008 | 400 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.0% | 9.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.8% | 6.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 24.3% | 3.3% | 4.3% | 36.0% |
| 2009 | 623 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.0% | 9.1% | 0.0% | 4.5% | 0.0% | 0.0% | 0.0% | 3.9% | 4.7% | 0.0% | 0.0% | 0.0% | 7.2% | 0.0% | 28.9% | 2.7% | 4.7% | 30.3% |
| 2010 | 1643 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.2% | 0.0% | 6.5% | 6.3% | 0.0% | 2.9% | 0.0% | 0.0% | 0.0% | 14.5% | 5.2% | 3.7% | 0.0% | 0.0% | 0.4% | 0.0% | 28.6% | 3.3% | 2.9% | 25.4% |
| 2011 | 860 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.2% | 6.3% | 0.0% | 0.7% | 0.0% | 0.0% | 0.9% | 4.7% | 7.3% | 2.2% | 0.3% | 0.0% | 2.9% | 0.0% | 21.5% | 3.1% | 8.3% | 32.6% |
| 2012 | 868 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 3.0% | 8.5% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 9.2% | 12.8% | 6.7% | 1.5% | 0.0% | 2.9% | 0.0% | 16.5% | 2.6% | 3.6% | 31.7% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 1288 | | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 17.8% | 4.2% | 0.0% | 1.7% | 0.4% | 0.7% | 0.2% | 8.8% | 3.6% | 3.4% | 0.4% | 0.2% | 2.3% | 0.0% | 9.2% | 3.4% | 3.4% | 40.1% |
| 1979-1984 | 2225 | | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 35.2% | 0.5% | 0.1% | 1.7% | 1.8% | 2.0% | 0.0% | 15.0% | 5.8% | 2.5% | 0.2% | 1.1% | 4.2% | 0.0% | 7.5% | 0.4% | 0.2% | 21.7% |
| 1985-1995 | 1642 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.4% | 1.5% | 0.0% | 2.8% | 0.4% | 1.3% | 0.0% | 10.3% | 2.3% | 4.0% | 0.6% | 0.1% | 3.3% | 0.0% | 6.5% | 3.7% | 0.9% | 41.9% |
| 1996-1998 | 135 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.0% | 4.7% | 0.0% | 1.0% | 0.0% | 0.0% | 1.5% | 1.3% | 1.6% | 4.8% | 0.0% | 0.0% | 0.0% | 0.0% | 2.9% | 10.3% | 5.4% | 57.5% |
| 1999-2013 | 921 | | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 11.4% | 7.5% | 0.0% | 1.0% | 0.0% | 0.0% | 0.1% | 7.0% | 4.3% | 3.0% | 0.5% | 0.0% | 1.3% | 0.0% | 13.3% | 2.8% | 6.1% | 41.4% |

*Appendix C17. Percent distribution of Lewis River Wild (Lewis River Wild) total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 196 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 299 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 1201 | 2,3,4 | 7.5% | 0.0% | 0.0% | 3.7% | 0.0% | 6.9% | 0.0% | 0.0% | 2.2% | 1.6% | 0.9% | 0.0% | 1.9% | 2.9% | 0.6% | 0.1% | 0.2% | 0.2% | 0.0% | 4.8% | 12.7% | 2.7% | 51.0% |
| 1982 | 972 | 3,4,5 | 7.7% | 0.8% | 0.1% | 3.3% | 0.0% | 11.1% | 0.0% | 0.4% | 0.0% | 1.5% | 1.4% | 0.0% | 3.4% | 7.6% | 1.0% | 0.0% | 0.6% | 0.8% | 0.0% | 5.5% | 15.0% | 1.2% | 38.4% |
| 1983 | 1080 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | 376 | 2,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | 380 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | 690 | 2,3,4 | 6.1% | 0.0% | 0.0% | 2.5% | 0.0% | 8.1% | 2.5% | 0.0% | 0.0% | 2.3% | 0.9% | 0.0% | 1.6% | 0.6% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 26.8% | 11.0% | 0.9% | 34.8% |
| 1987 | 1208 | 2,3,4,5 | 5.5% | 0.0% | 0.0% | 5.3% | 0.0% | 9.4% | 1.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.0% | 1.1% | 0.8% | 1.7% | 0.0% | 0.0% | 0.2% | 0.0% | 26.9% | 4.8% | 2.2% | 39.7% |
| 1988 | 1038 | 2,3,4,5 | 5.0% | 0.0% | 0.0% | 3.4% | 0.0% | 10.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 3.9% | 0.6% | 1.1% | 0.5% | 0.0% | 1.4% | 0.0% | 24.1% | 14.5% | 1.8% | 32.9% |
| 1989 | 1360 | 2,3,4,5 | 2.4% | 0.7% | 0.2% | 5.1% | 0.4% | 5.9% | 0.5% | 0.0% | 0.0% | 0.2% | 1.5% | 0.0% | 3.0% | 0.7% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 9.8% | 6.8% | 4.4% | 56.0% |
| 1990 | 1207 | 2,3,4,5 | 7.4% | 0.0% | 0.0% | 2.0% | 0.0% | 13.3% | 0.8% | 0.0% | 0.0% | 0.4% | 0.6% | 0.6% | 2.7% | 1.8% | 1.5% | 0.0% | 0.0% | 1.3% | 0.0% | 3.3% | 2.2% | 1.7% | 60.5% |
| 1991 | 916 | 2,3,4,5 | 7.0% | 0.2% | 0.0% | 4.1% | 1.2% | 6.4% | 0.0% | 0.0% | 0.0% | 0.4% | 0.7% | 0.0% | 1.3% | 0.5% | 1.1% | 0.5% | 0.0% | 0.0% | 0.0% | 15.6% | 6.3% | 1.3% | 53.2% |
| 1992 | 583 | 2,3,4,5 | 1.9% | 0.0% | 0.0% | 4.1% | 0.0% | 6.7% | 0.0% | 0.0% | 0.9% | 1.9% | 0.0% | 0.0% | 1.4% | 0.3% | 1.9% | 0.3% | 0.0% | 1.0% | 0.0% | 4.8% | 22.6% | 2.2% | 49.9% |
| 1993 | 407 | 2,3,4,5 | 4.2% | 0.0% | 1.0% | 5.9% | 0.0% | 8.6% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 1.5% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.9% | 8.8% | 5.7% | 55.3% |
| 1994 | 265 | 2,3,4,5 | 9.1% | 0.0% | 0.0% | 4.9% | 0.0% | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 3.8% | 74.7% |
| 1995 | 556 | 2,3,4,5 | 7.6% | 0.0% | 2.2% | 4.0% | 0.0% | 6.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 24.8% | 2.3% | 52.3% |
| 1996 | 330 | 2,3,4,5 | 9.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 4.5% | 0.3% | 82.1% |
| 1997 | 234 | 3,4,5 | 15.4% | 0.0% | 0.0% | 4.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.0% | 0.0% | 76.9% |
| 1998 | 101 | 2,4,5 | 7.9% | 0.0% | 0.0% | 5.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 2.0% | 8.9% | 74.3% |
| 1999 | 62 | 2,3,5 | 17.7% | 0.0% | 1.6% | 8.1% | 0.0% | 1.6% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 66.1% |
| 2000 | 73 | 2,3,4 | 8.2% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.1% | 2.7% | 6.8% | 64.4% |
| 2001 | 238 | 2,3,4,5 | 5.9% | 0.0% | 1.7% | 0.0% | 0.0% | 8.8% | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 2.1% | 1.3% | 0.8% | 0.0% | 0.0% | 0.0% | 2.5% | 2.9% | 2.9% | 62.2% |
| 2002 | 391 | 2,3,4,5 | 14.6% | 0.0% | 1.8% | 0.0% | 0.0% | 5.6% | 5.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 2.3% | 4.1% | 0.0% | 0.0% | 0.0% | 0.0% | 4.6% | 2.3% | 3.8% | 52.4% |
| 2003 | 477 | 2,3,4,5 | 10.7% | 0.0% | 0.0% | 1.7% | 1.3% | 4.8% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.1% | 1.0% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 6.5% | 5.9% | 1.3% | 55.3% |
| 2004 | 2170 | 2,3,4,5 | 6.6% | 0.0% | 0.5% | 3.3% | 0.5% | 2.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 2.5% | 1.9% | 0.5% | 81.2% |
| 2005 | 391 | 2,3,4,5 | 4.1% | 0.0% | 0.0% | 13.0% | 7.2% | 4.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.8% | 8.7% | 0.3% | 48.1% |
| 2006 | 591 | 2,3,4,5 | 14.6% | 0.0% | 0.5% | 6.6% | 1.7% | 8.3% | 1.0% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 1.2% | 0.5% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 5.6% | 19.3% | 1.4% | 37.2% |
| 2007 | 206 | 2,3,4,5 | 37.4% | 0.0% | 1.0% | 6.3% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 2.9% | 5.8% | 0.0% | 0.0% | 0.0% | 0.0% | 2.9% | 0.0% | 1.5% | 39.3% |
| 2008 | 142 | 2,3,4,5 | 8.5% | 0.0% | 0.0% | 0.0% | 1.4% | 12.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 5.6% | 0.7% | 0.0% | 0.0% | 0.0% | 5.6% | 0.0% | 0.0% | 4.9% | 0.0% | 57.7% |
| 2009 | 176 | 2,3,4,5 | 19.9% | 0.0% | 0.0% | 3.4% | 2.3% | 6.3% | 19.3% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 3.4% | 0.0% | 42.6% |
| 2010 | 200 | 2,3,4,5 | 6.5% | 0.0% | 0.0% | 5.0% | 2.5% | 1.5% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.0% | 4.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 8.0% | 0.0% | 64.0% |
| 2011 | 225 | 2,3,4,5 | 12.4% | 0.0% | 1.3% | 12.0% | 1.3% | 4.4% | 4.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 6.2% | 2.2% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 20.9% | 1.8% | 30.7% |
| 2012 | 211 | 3,4,5 | 13.3% | 2.4% | 0.5% | 3.8% | 3.8% | 7.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.8% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.6% | 6.2% | 1.4% | 48.3% |
| 2013 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 573 |  | 9.8% | 0.1% | 0.5% | 4.2% | 0.8% | 5.8% | 1.5% | 0.0% | 0.2% | 0.3% | 0.4% | 0.1% | 2.0% | 1.4% | 1.2% | 0.1% | 0.0% | 0.4% | 0.0% | 6.7% | 7.8% | 2.2% | 54.5% |
| 1979-1984 | 1086 |  | 7.6% | 0.4% | 0.1% | 3.5% | 0.0% | 9.0% | 0.0% | 0.2% | 1.1% | 1.6% | 1.2% | 0.0% | 2.7% | 5.3% | 0.8% | 0.0% | 0.4% | 0.5% | 0.0% | 5.1% | 13.9% | 2.0% | 44.7% |
| 1985-1995 | 823 |  | 5.6% | 0.1% | 0.3% | 4.1% | 0.2% | 7.9% | 0.5% | 0.0% | 0.1% | 0.7% | 0.8% | 0.1% | 1.7% | 0.6% | 1.2% | 0.1% | 0.0% | 0.4% | 0.0% | 12.0% | 10.2% | 2.6% | 50.9% |
| 1996-1998 | 222 |  | 10.9% | 0.0% | 0.0% | 3.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 3.2% | 3.1% | 77.8% |
| 1999-2013 | 397 |  | 12.9% | 0.2% | 0.7% | 4.5% | 1.6% | 5.0% | 2.8% | 0.0% | 0.2% | 0.0% | 0.0% | 0.2% | 2.6% | 1.8% | 1.3% | 0.1% | 0.0% | 0.4% | 0.0% | 4.5% | 6.2% | 1.7% | 53.5% |

*Appendix C18. Percent distribution of Lyons Ferry (Lyons Ferry Hatchery) total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | 332 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 769 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 761 | 2,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 400 | 2,3,5 | 1.5% | 0.0% | 0.0% | 6.0% | 0.0% | 17.5% | 1.8% | 0.0% | 0.0% | 0.0% | 3.0% | 0.0% | 8.0% | 1.3% | 7.0% | 4.0% | 0.0% | 0.0% | 0.0% | 19.8% | 1.5% | 0.0% | 28.8% |
| 1990 | 542 | 2,3,4 | 3.0% | 0.0% | 0.0% | 2.6% | 0.0% | 18.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 8.1% | 3.7% | 5.2% | 0.6% | 0.0% | 0.0% | 0.0% | 24.7% | 1.1% | 0.0% | 32.5% |
| 1991 | 307 | 2,3,4,5 | 2.6% | 0.0% | 2.3% | 4.6% | 0.0% | 13.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.7% | 0.7% | 2.9% | 1.6% | 0.0% | 0.0% | 0.0% | 12.7% | 1.0% | 0.3% | 56.4% |
| 1992 | 267 | 3,4,5 | 1.9% | 0.0% | 0.0% | 7.1% | 1.5% | 11.6% | 4.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 5.2% | 0.0% | 0.0% | 1.5% | 0.0% | 6.4% | 6.0% | 0.0% | 52.4% |
| 1993 | 229 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | 106 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | 39 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | 42 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1998 | 159 | 4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1999 | 123 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2000 | 785 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2001 | 1667 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2002 | 1856 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | 575 | 2,4,5 | 7.1% | 0.0% | 0.0% | 1.6% | 0.2% | 3.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.7% | 2.1% | 3.8% | 0.0% | 0.0% | 0.2% | 0.0% | 10.8% | 0.9% | 0.2% | 64.2% |
| 2004 | 691 | 2,3,5 | 3.3% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 1.3% | 1.4% | 0.3% | 0.0% | 0.3% | 0.0% | 5.1% | 0.9% | 0.3% | 86.3% |
| 2005 | 433 | 2,3,4 | 3.5% | 0.2% | 0.0% | 2.8% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 2.1% | 2.5% | 2.5% | 0.0% | 0.0% | 2.3% | 0.0% | 12.7% | 0.9% | 0.0% | 64.9% |
| 2006 | 389 | 2,3,4,5 | 4.1% | 0.0% | 0.0% | 0.5% | 2.1% | 0.8% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 6.9% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.3% | 1.0% | 0.0% | 71.0% |
| 2007 | 1577 | 2,3,4,5 | 0.2% | 0.1% | 0.0% | 0.2% | 0.0% | 1.6% | 0.4% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.3% | 0.1% | 0.1% | 0.1% | 0.0% | 2.2% | 0.0% | 4.5% | 2.3% | 0.0% | 85.9% |
| 2008 | 2552 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.2% | 0.2% | 6.1% | 1.5% | 0.0% | 0.5% | 0.0% | 0.0% | 0.2% | 4.1% | 2.3% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 8.5% | 2.5% | 0.0% | 73.6% |
| 2009 | 5310 | 2,3,4,5 | 0.6% | 0.0% | 0.1% | 0.6% | 0.0% | 1.2% | 1.3% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 1.1% | 0.9% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 9.5% | 2.8% | 0.2% | 81.1% |
| 2010 | 3380 | 2,3,4,5 | 1.0% | 0.1% | 0.0% | 1.3% | 0.1% | 4.5% | 4.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 8.5% | 7.2% | 1.6% | 0.3% | 0.0% | 0.4% | 0.0% | 17.5% | 3.7% | 0.0% | 49.5% |
| 2011 | 2796 | 2,3,4,5 | 1.8% | 0.0% | 0.1% | 1.0% | 0.3% | 4.4% | 3.1% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 4.0% | 2.0% | 1.4% | 0.8% | 0.0% | 1.2% | 0.0% | 22.7% | 6.5% | 0.0% | 50.6% |
| 2012 | 1877 | 3,4,5 | 1.6% | 0.4% | 0.1% | 0.3% | 0.0% | 4.5% | 4.1% | 0.0% | 0.3% | 0.0% | 0.0% | 0.6% | 6.9% | 4.4% | 2.7% | 0.8% | 0.0% | 0.6% | 0.0% | 13.1% | 14.3% | 5.7% | 39.6% |
| 2013 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 1507 |  | 2.3% | 0.1% | 0.2% | 2.1% | 0.3% | 6.5% | 1.6% | 0.0% | 0.2% | 0.0% | 0.3% | 0.3% | 4.2% | 2.1% | 2.4% | 0.6% | 0.0% | 0.6% | 0.0% | 12.7% | 3.2% | 0.5% | 59.8% |
| 1979-1984 | 0 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 379 |  | 2.2% | 0.0% | 0.6% | 5.1% | 0.4% | 15.1% | 1.5% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 4.8% | 1.4% | 5.1% | 1.5% | 0.0% | 0.4% | 0.0% | 15.9% | 2.4% | 0.1% | 42.5% |
| 1996-1998 | 0 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1999-2013 | 1958 |  | 2.3% | 0.1% | 0.0% | 0.9% | 0.3% | 3.0% | 1.6% | 0.0% | 0.3% | 0.0% | 0.0% | 0.4% | 4.0% | 2.4% | 1.4% | 0.2% | 0.0% | 0.8% | 0.0% | 11.4% | 3.6% | 0.6% | 66.7% |

*Appendix C19. Percent distribution of Lyons Ferry Yearling total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | 185 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 460 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 1737 | 2,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 1817 | 2,3,5 | 0.3% | 0.6% | 0.0% | 1.6% | 0.0% | 8.8% | 6.5% | 0.1% | 0.1% | 0.5% | 3.4% | 0.0% | 8.1% | 1.5% | 5.6% | 1.3% | 0.6% | 2.1% | 0.0% | 16.1% | 2.6% | 0.0% | 40.4% |
| 1990 | 3602 | 2,3,4,6 | 0.6% | 0.0% | 0.0% | 0.6% | 0.0% | 17.9% | 3.4% | 0.0% | 0.1% | 0.7% | 1.2% | 0.0% | 9.6% | 4.9% | 11.4% | 0.5% | 0.4% | 2.9% | 0.0% | 14.2% | 1.4% | 0.7% | 29.5% |
| 1991 | 2871 | 3,4,5 | 0.2% | 0.0% | 0.0% | 0.7% | 0.0% | 12.2% | 2.0% | 0.2% | 0.5% | 0.1% | 1.8% | 0.0% | 7.3% | 1.1% | 5.3% | 1.1% | 0.4% | 0.8% | 0.0% | 16.0% | 0.9% | 0.2% | 49.2% |
| 1992 | 2183 | 4,5,6 | 0.9% | 0.0% | 0.0% | 2.6% | 0.0% | 22.0% | 3.3% | 0.0% | 0.1% | 0.0% | 0.9% | 0.2% | 17.2% | 1.6% | 4.6% | 0.5% | 0.0% | 2.1% | 0.0% | 9.0% | 1.8% | 0.0% | 33.1% |
| 1993 | 716 | 2,5,6 | 4.9% | 0.0% | 0.0% | 1.7% | 0.0% | 26.4% | 1.4% | 0.4% | 0.3% | 0.0% | 0.0% | 0.0% | 9.2% | 1.4% | 4.6% | 0.0% | 0.0% | 0.0% | 0.0% | 15.9% | 0.0% | 2.0% | 31.8% |
| 1994 | 369 | 2,3,6 | 0.5% | 0.0% | 0.0% | 0.3% | 0.0% | 1.9% | 0.5% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.3% | 0.0% | 1.6% | 0.0% | 0.8% | 0.0% | 0.0% | 15.2% | 1.6% | 1.4% | 75.6% |
| 1995 | 3910 | 2,3,4 | 0.3% | 0.0% | 0.0% | 0.7% | 0.1% | 0.9% | 0.5% | 0.0% | 0.0% | 0.1% | 0.7% | 0.1% | 0.5% | 0.1% | 0.3% | 0.1% | 0.3% | 0.0% | 0.0% | 5.9% | 4.1% | 0.5% | 84.7% |
| 1996 | 3392 | 2,3,4,5 | 0.8% | 0.1% | 0.1% | 0.8% | 0.0% | 1.0% | 0.6% | 0.0% | 0.1% | 0.0% | 1.2% | 0.1% | 0.9% | 0.1% | 5.2% | 0.0% | 0.0% | 0.0% | 0.0% | 16.1% | 3.3% | 0.9% | 68.8% |
| 1997 | 3394 | 2,3,4,5,6 | 1.8% | 0.0% | 0.0% | 1.0% | 0.0% | 4.6% | 1.1% | 0.0% | 0.0% | 0.4% | 0.6% | 0.2% | 1.3% | 0.5% | 6.3% | 0.4% | 0.0% | 0.1% | 0.0% | 13.1% | 4.8% | 1.6% | 62.3% |
| 1998 | 5604 | 2,3,4,5,6 | 1.7% | 0.1% | 0.2% | 2.5% | 0.9% | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.1% | 0.4% | 1.3% | 0.2% | 1.7% | 0.1% | 0.0% | 0.1% | 0.0% | 10.7% | 6.2% | 0.4% | 73.1% |
| 1999 | 7428 | 2,3,4,5,6 | 1.4% | 0.1% | 0.3% | 0.9% | 0.1% | 1.2% | 1.3% | 0.0% | 0.5% | 0.1% | 0.1% | 0.0% | 7.2% | 2.0% | 6.0% | 0.5% | 0.0% | 0.0% | 0.0% | 8.1% | 4.1% | 1.2% | 65.0% |
| 2000 | 6544 | 2,3,4,5,6 | 1.6% | 0.0% | 0.1% | 0.0% | 0.0% | 6.3% | 3.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 2.6% | 3.7% | 3.7% | 0.6% | 0.0% | 0.0% | 0.0% | 11.7% | 4.3% | 0.9% | 60.4% |
| 2001 | 10049 | 2,3,4,5,6 | 0.7% | 0.0% | 0.1% | 0.0% | 0.0% | 7.5% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 5.2% | 3.9% | 15.4% | 1.2% | 0.0% | 0.6% | 0.0% | 13.8% | 3.8% | 0.4% | 45.1% |
| 2002 | 7038 | 2,3,4,5,6 | 1.3% | 0.2% | 0.0% | 0.8% | 0.1% | 7.0% | 1.6% | 0.0% | 0.0% | 0.0% | 0.4% | 0.5% | 11.8% | 9.1% | 6.5% | 1.9% | 0.2% | 0.2% | 0.0% | 11.5% | 4.3% | 0.5% | 42.1% |
| 2003 | 10545 | 2,3,4,5,6 | 0.6% | 0.0% | 0.0% | 0.2% | 0.1% | 6.4% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.5% | 2.3% | 3.5% | 1.0% | 0.0% | 0.3% | 0.0% | 8.9% | 2.4% | 0.3% | 68.1% |
| 2004 | 14727 | 2,3,4,5,6 | 0.4% | 0.0% | 0.0% | 0.3% | 0.0% | 3.7% | 0.8% | 0.0% | 0.1% | 0.0% | 0.0% | 0.1% | 4.3% | 2.0% | 4.6% | 1.2% | 0.0% | 0.6% | 0.0% | 5.4% | 2.2% | 0.6% | 73.7% |
| 2005 | 8612 | 2,3,4,5,6 | 0.4% | 0.0% | 0.0% | 0.5% | 0.2% | 8.6% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 6.8% | 5.8% | 4.8% | 0.5% | 0.0% | 0.3% | 0.0% | 10.7% | 1.9% | 0.5% | 56.3% |
| 2006 | 5936 | 2,3,4,5,6 | 0.4% | 0.0% | 0.1% | 1.3% | 0.5% | 4.4% | 1.8% | 0.0% | 0.3% | 0.0% | 0.0% | 0.2% | 5.2% | 2.3% | 1.3% | 0.2% | 0.1% | 0.5% | 0.0% | 10.7% | 1.8% | 1.0% | 67.9% |
| 2007 | 7638 | 2,3,4,5,6 | 0.9% | 0.3% | 0.1% | 0.5% | 0.0% | 5.4% | 1.7% | 0.0% | 0.3% | 0.0% | 0.1% | 0.0% | 4.3% | 2.6% | 1.6% | 0.7% | 0.0% | 0.6% | 0.0% | 7.9% | 2.1% | 0.7% | 70.3% |
| 2008 | 6177 | 2,3,4,5,6 | 0.3% | 0.0% | 0.0% | 0.1% | 0.4% | 3.6% | 1.9% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 3.7% | 1.4% | 0.0% | 0.0% | 0.2% | 0.3% | 0.0% | 11.8% | 2.6% | 0.1% | 73.4% |
| 2009 | 11322 | 2,3,4,5,6 | 0.1% | 0.1% | 0.0% | 0.2% | 0.1% | 1.5% | 4.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.1% | 3.1% | 4.9% | 0.0% | 0.1% | 0.1% | 2.5% | 0.0% | 10.2% | 3.4% | 0.0% | 69.1% |
| 2010 | 6715 | 2,3,4,5,6 | 0.8% | 0.1% | 0.0% | 1.1% | 0.2% | 6.3% | 3.6% | 0.0% | 0.3% | 0.0% | 0.0% | 0.3% | 9.5% | 9.6% | 3.2% | 0.2% | 0.0% | 0.4% | 0.0% | 27.7% | 3.3% | 0.4% | 33.0% |
| 2011 | 4813 | 3,4,5,6 | 0.6% | 0.0% | 0.0% | 0.5% | 0.1% | 4.6% | 3.6% | 0.0% | 0.1% | 0.0% | 0.0% | 0.1% | 6.4% | 8.1% | 1.7% | 1.0% | 0.0% | 0.8% | 0.0% | 26.3% | 9.7% | 0.5% | 35.9% |
| 2012 | 3983 | 2,4,5,6 | 0.8% | 0.0% | 0.0% | 0.5% | 0.0% | 2.2% | 1.9% | 0.0% | 0.2% | 0.0% | 0.0% | 0.4% | 9.0% | 5.4% | 5.9% | 1.3% | 0.0% | 0.2% | 0.0% | 15.5% | 7.4% | 7.0% | 42.4% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 5808 | | 0.9% | 0.1% | 0.0% | 0.8% | 0.1% | 6.8% | 2.1% | 0.0% | 0.2% | 0.1% | 0.4% | 0.1% | 5.8% | 3.1% | 4.4% | 0.6% | 0.1% | 0.6% | 0.0% | 13.0% | 3.3% | 0.9% | 56.3% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 2210 | | 1.1% | 0.1% | 0.0% | 1.2% | 0.0% | 12.9% | 2.5% | 0.1% | 0.2% | 0.2% | 1.2% | 0.0% | 7.5% | 1.5% | 4.8% | 0.5% | 0.4% | 1.1% | 0.0% | 13.2% | 1.8% | 0.7% | 49.2% |
| 1996-1998 | 4130 | | 1.4% | 0.1% | 0.1% | 1.5% | 0.3% | 1.9% | 0.5% | 0.0% | 0.1% | 0.1% | 0.6% | 0.3% | 1.2% | 0.3% | 4.4% | 0.2% | 0.0% | 0.1% | 0.0% | 13.3% | 4.8% | 1.0% | 68.1% |
| 1999-2013 | 7966 | | 0.7% | 0.1% | 0.1% | 0.5% | 0.1% | 4.9% | 2.3% | 0.0% | 0.2% | 0.0% | 0.0% | 0.2% | 6.0% | 4.5% | 4.2% | 0.7% | 0.0% | 0.5% | 0.0% | 12.9% | 3.8% | 1.0% | 57.3% |

*Appendix C20. Percent distribution of Middle Shuswap River Summer (Fraser Early) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1998 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1999 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2000 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2001 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2002 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2004 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2005 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2006 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2007 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2008 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2009 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2010 | 3 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2011 | 56 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2012 | 243 | 2,3,4 | 2.9% | 0.0% | 1.2% | 6.2% | 5.3% | 1.2% | 0.0% | 0.0% | 17.7% | 0.0% | 0.0% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.4% | 3.3% | 1.6% | 44.0% |
| 2013 | 1594 | 3,4,5 | 1.1% | 0.0% | 0.3% | 2.5% | 1.1% | 0.1% | 0.2% | 0.0% | 16.0% | 0.1% | 0.0% | 0.1% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.5% | 2.2% | 2.3% | 64.4% |
| 1979-2013 | 918 | | 2.0% | 0.0% | 0.8% | 4.3% | 3.2% | 0.6% | 0.1% | 0.0% | 16.8% | 0.0% | 0.0% | 0.1% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.9% | 2.7% | 2.0% | 54.2% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1996-1998 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1999-2013 | 918 | | 2.0% | 0.0% | 0.8% | 4.3% | 3.2% | 0.6% | 0.1% | 0.0% | 16.8% | 0.0% | 0.0% | 0.1% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.9% | 2.7% | 2.0% | 54.2% |

*Appendix C21. Percent distribution of Nanaimo River Fall (Lower Strait of Georgia Natural) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 286 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | 1556 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | 1872 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | 542 | 2,4,5 | 4.2% | 0.0% | 0.0% | 1.8% | 0.0% | 1.7% | 0.7% | 1.1% | 45.8% | 12.5% | 19.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 1.1% | 0.0% | 0.4% | 0.0% | 0.0% | 11.1% |
| 1985 | 57 | 3,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | 27 | 4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 25 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | 421 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | 1201 | 2,3,4 | 0.2% | 0.4% | 0.0% | 0.7% | 0.1% | 1.7% | 0.7% | 6.8% | 56.6% | 1.1% | 8.2% | 0.1% | 0.7% | 0.0% | 0.0% | 0.0% | 2.7% | 0.9% | 0.0% | 0.0% | 0.0% | 0.4% | 18.7% |
| 1992 | 2327 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.6% | 0.0% | 5.1% | 0.2% | 8.2% | 48.5% | 1.2% | 5.5% | 0.2% | 0.4% | 0.1% | 0.0% | 0.0% | 0.7% | 0.8% | 0.0% | 0.0% | 0.0% | 0.3% | 28.1% |
| 1993 | 1646 | 2,3,4,5 | 0.1% | 0.4% | 0.0% | 1.7% | 0.2% | 2.7% | 0.5% | 6.1% | 57.3% | 1.3% | 4.4% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.2% | 1.0% | 0.0% | 0.0% | 0.0% | 0.4% | 23.1% |
| 1994 | 511 | 2,3,4,5 | 0.6% | 0.0% | 0.0% | 0.8% | 0.0% | 3.7% | 1.2% | 0.8% | 40.1% | 0.0% | 6.7% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 0.0% | 0.8% | 0.0% | 0.4% | 42.5% |
| 1995 | 1635 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.7% | 0.0% | 38.1% | 0.0% | 3.1% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 0.2% | 0.0% | 0.4% | 54.0% |
| 1996 | 950 | 2,3,4,5 | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.3% | 0.4% | 0.0% | 68.3% | 0.0% | 2.3% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.5% | 3.2% | 0.0% | 3.6% | 0.0% | 2.2% | 17.6% |
| 1997 | 288 | 2,3,4,5 | 6.3% | 0.0% | 0.0% | 4.2% | 0.0% | 0.7% | 0.3% | 0.0% | 41.0% | 2.8% | 2.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.2% | 3.8% | 0.0% | 1.0% | 0.0% | 0.7% | 32.3% |
| 1998 | 266 | 2,3,4,5 | 1.1% | 4.5% | 0.0% | 6.0% | 0.0% | 0.4% | 0.0% | 0.0% | 44.0% | 0.0% | 1.9% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.4% | 36.8% |
| 1999 | 306 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 38.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.3% | 2.9% | 0.0% | 1.0% | 0.0% | 2.3% | 49.7% |
| 2000 | 171 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.9% | 6.4% | 0.0% | 49.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.3% | 0.0% | 2.3% | 33.9% |
| 2001 | 547 | 2,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 40.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.4% | 9.3% | 0.0% | 2.4% | 0.0% | 0.4% | 42.6% |
| 2002 | 928 | 2,3,5 | 0.3% | 0.1% | 0.0% | 0.0% | 0.2% | 1.0% | 0.1% | 0.0% | 43.1% | 0.0% | 2.6% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 2.6% | 4.0% | 0.0% | 4.1% | 0.0% | 1.0% | 40.5% |
| 2003 | 874 | 2,3,4 | 0.1% | 0.7% | 0.1% | 0.1% | 0.0% | 3.8% | 0.8% | 0.0% | 24.9% | 0.0% | 0.0% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 1.9% | 3.2% | 0.0% | 1.3% | 0.0% | 2.7% | 57.9% |
| 2004 | 803 | 2,3,4,5 | 1.1% | 0.0% | 0.0% | 0.7% | 2.4% | 5.4% | 2.2% | 0.0% | 16.3% | 0.0% | 0.0% | 2.6% | 0.7% | 0.0% | 0.0% | 0.0% | 1.6% | 3.0% | 0.0% | 1.4% | 0.0% | 4.6% | 57.9% |
| 2005 | 418 | 3,4,5 | 0.7% | 0.0% | 0.7% | 1.9% | 0.0% | 7.7% | 2.2% | 0.0% | 13.9% | 0.0% | 0.0% | 7.9% | 0.0% | 0.0% | 0.0% | 0.0% | 3.1% | 1.2% | 0.0% | 23.9% | 0.0% | 0.7% | 36.1% |
| 2006 | 1568 | 2,4,5 | 0.3% | 0.0% | 0.0% | 0.1% | 0.0% | 0.4% | 0.5% | 0.0% | 15.7% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.6% | 1.7% | 0.0% | 4.5% | 0.0% | 1.5% | 74.4% |
| 2007 | 1089 | 3,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2008 | 261 | 4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2009 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2010 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2011 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2012 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 881 | | 0.9% | 0.4% | 0.0% | 1.1% | 0.2% | 2.3% | 1.1% | 1.4% | 40.1% | 1.1% | 3.3% | 1.0% | 0.2% | 0.0% | 0.0% | 0.0% | 1.5% | 2.3% | 0.0% | 2.9% | 0.0% | 1.4% | 38.7% |
| 1979-1984 | 542 | | 4.2% | 0.0% | 0.0% | 1.8% | 0.0% | 1.7% | 0.7% | 1.1% | 45.8% | 12.5% | 19.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 1.1% | 0.0% | 0.4% | 0.0% | 0.0% | 11.1% |
| 1985-1995 | 1464 | | 0.2% | 0.2% | 0.0% | 0.8% | 0.1% | 3.0% | 0.7% | 4.4% | 48.1% | 0.7% | 5.6% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.7% | 1.2% | 0.0% | 0.2% | 0.0% | 0.4% | 33.3% |
| 1996-1998 | 501 | | 2.5% | 2.0% | 0.0% | 3.4% | 0.0% | 0.5% | 0.3% | 0.0% | 51.1% | 0.9% | 2.3% | 0.6% | 0.1% | 0.0% | 0.0% | 0.0% | 1.6% | 2.3% | 0.0% | 1.5% | 0.0% | 2.1% | 28.9% |
| 1999-2013 | 702 | | 0.3% | 0.1% | 0.1% | 0.4% | 0.3% | 2.8% | 1.8% | 0.0% | 30.2% | 0.0% | 0.3% | 1.7% | 0.1% | 0.0% | 0.0% | 0.0% | 2.2% | 3.2% | 0.0% | 5.5% | 0.0% | 1.9% | 49.1% |

*Appendix C22. Percent distribution of Nicola River Spring (Fraser Early) total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 20 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 200 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 1396 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.3% | 1.1% | 1.1% | 0.0% | 0.0% | 11.2% | 0.0% | 0.4% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 1.0% | 1.9% | 0.0% | 20.0% | 2.3% | 0.3% | 59.5% |
| 1990 | 271 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 3.3% | 0.0% | 14.8% | 16.2% | 1.8% | 57.6% |
| 1991 | 1320 | 2,3,4,5 | 0.2% | 0.5% | 0.0% | 0.0% | 0.2% | 4.1% | 0.0% | 0.2% | 5.7% | 0.2% | 0.7% | 0.0% | 0.8% | 0.0% | 0.0% | 0.2% | 0.2% | 1.5% | 0.0% | 13.5% | 8.4% | 0.9% | 62.8% |
| 1992 | 545 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 5.3% | 0.0% | 5.1% | 0.0% | 0.0% | 8.3% | 2.6% | 0.9% | 0.0% | 5.0% | 0.0% | 0.6% | 0.0% | 0.0% | 6.1% | 0.0% | 6.4% | 9.4% | 0.4% | 50.1% |
| 1993 | 1177 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 3.2% | 0.0% | 5.8% | 1.2% | 0.0% | 6.2% | 0.0% | 1.4% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 0.0% | 10.0% | 5.7% | 0.0% | 62.2% |
| 1994 | 2050 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 3.6% | 0.4% | 0.0% | 3.6% | 0.0% | 0.2% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 8.1% | 0.2% | 82.1% |
| 1995 | 1869 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.2% | 0.6% | 1.3% | 0.5% | 0.0% | 3.0% | 0.0% | 1.5% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 3.4% | 3.6% | 0.0% | 85.4% |
| 1996 | 73 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 2.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.8% | 0.0% | 0.0% | 76.7% |
| 1997 | 261 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 0.0% | 12.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.8% | 0.0% | 1.5% | 5.4% | 0.0% | 61.7% |
| 1998 | 423 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 3.8% | 0.0% | 0.0% | 0.0% | 2.6% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.6% | 16.8% | 0.0% | 63.4% |
| 1999 | 2423 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.9% | 2.2% | 0.0% | 89.4% |
| 2000 | 1794 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 4.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.1% | 5.2% | 0.0% | 79.2% |
| 2001 | 2265 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 4.2% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.7% | 4.4% | 0.0% | 83.8% |
| 2002 | 2309 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 1.2% | 0.3% | 0.6% | 0.0% | 0.0% | 1.1% | 0.0% | 0.2% | 0.0% | 0.6% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 4.0% | 2.5% | 0.0% | 89.2% |
| 2003 | 1797 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 2.4% | 0.0% | 0.9% | 0.6% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 6.8% | 0.0% | 85.6% |
| 2004 | 440 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 2.3% | 0.0% | 1.8% | 0.0% | 0.0% | 3.9% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 23.6% | 0.0% | 0.0% | 67.5% |
| 2005 | 400 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 3.8% | 0.0% | 0.0% | 6.8% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.8% | 15.3% | 0.0% | 60.0% |
| 2006 | 421 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 1.9% | 0.0% | 0.0% | 3.1% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 11.2% | 9.7% | 0.0% | 71.3% |
| 2007 | 146 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 26.7% | 23.3% | 0.0% | 42.5% |
| 2008 | 610 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 1.1% | 0.8% | 0.0% | 0.0% | 0.0% | 3.4% | 0.0% | 0.0% | 0.0% | 2.1% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.8% | 3.6% | 0.0% | 77.7% |
| 2009 | 277 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 9.0% | 0.0% | 0.0% | 0.0% | 3.2% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 17.0% | 21.3% | 0.0% | 48.0% |
| 2010 | 2309 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 1.3% | 0.2% | 0.0% | 0.1% | 0.0% | 1.7% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 4.5% | 0.0% | 0.0% | 90.9% |
| 2011 | 686 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.4% | 0.0% | 4.2% | 0.0% | 0.0% | 0.0% | 1.9% | 0.3% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 5.2% | 2.5% | 0.0% | 83.4% |
| 2012 | 718 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.6% | 0.7% | 0.0% | 0.0% | 0.0% | 4.0% | 0.0% | 0.0% | 0.0% | 7.7% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 18.1% | 0.8% | 0.0% | 67.7% |
| 2013 | 1506 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.2% | 0.0% | 0.0% | 4.5% | 0.0% | 0.0% | 0.2% | 4.6% | 0.3% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 4.4% | 0.0% | 0.0% | 84.7% |
| 1979-2013 | 1099 | | 0.0% | 0.0% | 0.0% | 1.0% | 0.4% | 1.5% | 0.1% | 0.0% | 4.1% | 0.1% | 0.9% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 10.5% | 6.9% | 0.1% | 71.3% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 1233 | | 0.0% | 0.1% | 0.0% | 1.3% | 0.3% | 3.3% | 0.3% | 0.0% | 5.8% | 0.4% | 0.7% | 0.0% | 1.5% | 0.0% | 0.1% | 0.0% | 0.2% | 2.2% | 0.0% | 9.9% | 7.7% | 0.5% | 65.7% |
| 1996-1998 | 252 | | 0.0% | 0.0% | 0.0% | 0.9% | 1.3% | 0.0% | 0.0% | 0.0% | 2.7% | 0.0% | 5.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.6% | 0.0% | 10.3% | 7.4% | 0.0% | 67.3% |
| 1999-2013 | 1207 | | 0.0% | 0.0% | 0.0% | 0.9% | 0.3% | 1.0% | 0.1% | 0.0% | 3.6% | 0.0% | 0.0% | 0.0% | 1.7% | 0.1% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 10.8% | 6.5% | 0.0% | 74.7% |

*Appendix C23. Percent distribution of Nisqually Fall Fingerling total fishing mortalities among fisheries and escapement.*

| Catch | Estimated | Ages | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # of | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 26 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | 99 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983[1] | 303 | 2,3,4 | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 12.9% | 0.0% | 1.7% | 7.6% | 0.0% | 4.6% | 0.0% | 3.0% | 0.0% | 0.3% | 0.0% | 0.0% | 56.1% | 0.0% | 11.2% | 0.0% | 0.0% | 1.0% |
| 1984[1] | 251 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 30.3% | 0.0% | 0.0% | 1.6% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 23.9% | 0.0% | 36.3% | 0.0% | 0.4% | 4.4% |
| 1985[1] | 81 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 27.2% | 3.7% | 0.0% | 0.0% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% | 7.4% | 0.0% | 0.0% | 19.8% | 0.0% | 34.6% | 0.0% | 0.0% | 3.7% |
| 1986 | 131 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.0% | 0.0% | 0.0% | 14.5% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 19.1% | 0.0% | 32.1% | 0.0% | 0.0% | 16.8% |
| 1987 | 197 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.2% | 0.0% | 1.0% | 14.2% | 2.0% | 1.5% | 0.0% | 3.0% | 0.0% | 2.0% | 0.0% | 0.0% | 18.3% | 0.0% | 33.5% | 2.5% | 0.0% | 9.6% |
| 1988 | 492 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 4.5% | 0.0% | 2.8% | 32.7% | 1.6% | 3.5% | 0.0% | 6.3% | 0.0% | 0.0% | 0.0% | 0.0% | 15.7% | 0.0% | 15.2% | 0.0% | 0.0% | 16.9% |
| 1989 | 1155 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 5.3% | 6.0% | 0.0% | 2.9% | 0.0% | 3.8% | 0.0% | 14.6% | 0.2% | 0.0% | 0.3% | 0.0% | 18.6% | 0.0% | 40.3% | 0.4% | 0.0% | 7.2% |
| 1990 | 1390 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 23.4% | 5.9% | 0.0% | 3.2% | 0.2% | 0.1% | 0.0% | 10.5% | 0.1% | 0.0% | 0.0% | 0.0% | 13.0% | 0.0% | 35.9% | 0.0% | 0.0% | 7.6% |
| 1991 | 282 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 2.1% | 0.0% | 8.5% | 1.8% | 0.0% | 3.2% | 0.0% | 2.1% | 0.0% | 16.7% | 0.7% | 0.0% | 0.0% | 0.0% | 25.2% | 0.0% | 21.6% | 2.5% | 0.0% | 15.6% |
| 1992 | 544 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.6% | 3.5% | 0.0% | 6.4% | 0.0% | 2.2% | 0.0% | 5.9% | 0.0% | 0.4% | 0.0% | 0.0% | 27.4% | 0.0% | 19.9% | 0.0% | 0.0% | 27.8% |
| 1993 | 712 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.9% | 1.8% | 0.3% | 3.9% | 0.0% | 2.7% | 0.0% | 2.9% | 0.7% | 0.0% | 0.0% | 0.0% | 20.4% | 0.0% | 24.7% | 0.0% | 0.7% | 27.9% |
| 1994 | 1542 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.6% | 0.4% | 0.0% | 4.2% | 0.0% | 2.4% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 36.5% | 0.0% | 21.5% | 0.5% | 0.0% | 30.4% |
| 1995 | 2032 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 7.9% | 2.9% | 0.0% | 2.0% | 0.0% | 0.6% | 0.0% | 2.0% | 0.0% | 0.3% | 0.0% | 0.0% | 27.7% | 0.0% | 30.9% | 0.0% | 0.0% | 25.2% |
| 1996 | 1091 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 1.3% | 0.0% | 3.8% | 0.0% | 1.0% | 0.0% | 1.0% | 0.0% | 0.5% | 0.0% | 0.0% | 26.0% | 0.0% | 39.3% | 0.2% | 0.0% | 25.9% |
| 1997 | 755 | 2,3,4,5 | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 3.2% | 4.2% | 0.0% | 1.2% | 0.0% | 0.5% | 0.0% | 0.4% | 0.8% | 0.3% | 0.0% | 0.0% | 29.1% | 0.0% | 20.0% | 1.3% | 0.0% | 38.5% |
| 1998 | 1546 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.6% | 0.0% | 2.3% | 0.0% | 0.0% | 0.3% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 23.9% | 0.0% | 37.3% | 0.8% | 0.0% | 34.0% |
| 1999 | 1683 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 2.6% | 0.0% | 3.4% | 0.0% | 0.0% | 0.0% | 2.9% | 0.3% | 0.2% | 0.0% | 0.0% | 23.6% | 0.0% | 42.3% | 0.0% | 0.0% | 24.4% |
| 2000 | 738 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.3% | 3.0% | 0.0% | 3.8% | 0.0% | 0.0% | 0.0% | 1.1% | 1.5% | 0.4% | 0.0% | 0.0% | 28.2% | 0.0% | 37.8% | 0.0% | 0.1% | 10.8% |
| 2001 | 1200 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 3.1% | 2.8% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% | 3.3% | 0.4% | 1.0% | 0.0% | 0.0% | 26.1% | 0.0% | 27.3% | 0.0% | 0.0% | 34.3% |
| 2002 | 1555 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.4% | 3.4% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 2.8% | 0.5% | 0.7% | 0.0% | 0.0% | 12.4% | 0.0% | 41.3% | 3.3% | 0.0% | 28.1% |
| 2003 | 1770 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 5.1% | 1.9% | 0.0% | 1.3% | 0.0% | 0.0% | 0.6% | 3.8% | 0.0% | 0.8% | 0.0% | 0.0% | 15.0% | 0.0% | 42.8% | 1.9% | 0.0% | 26.8% |
| 2004 | 1897 | 2,3,4,5 | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 5.5% | 1.2% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 6.1% | 0.6% | 0.9% | 0.0% | 0.0% | 12.5% | 0.0% | 33.3% | 0.0% | 0.1% | 38.2% |
| 2005 | 1363 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 2.1% | 0.0% | 5.0% | 0.0% | 0.3% | 0.0% | 3.5% | 1.9% | 0.5% | 0.0% | 0.0% | 13.5% | 0.0% | 11.5% | 0.0% | 0.0% | 56.3% |
| 2006 | 3221 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 6.0% | 1.7% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 5.4% | 0.3% | 0.2% | 0.0% | 0.0% | 8.5% | 0.0% | 41.6% | 0.0% | 0.0% | 34.1% |
| 2007 | 3342 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 9.8% | 1.5% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 4.8% | 0.3% | 0.1% | 0.0% | 0.0% | 14.1% | 0.0% | 36.4% | 0.0% | 0.0% | 32.1% |
| 2008 | 1166 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 3.3% | 0.0% | 4.8% | 0.0% | 0.0% | 0.0% | 1.6% | 0.4% | 0.0% | 0.0% | 0.0% | 15.4% | 0.0% | 47.6% | 0.0% | 0.0% | 21.9% |
| 2009 | 1853 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 3.6% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 2.1% | 0.3% | 0.0% | 0.0% | 0.0% | 14.2% | 0.0% | 42.0% | 0.0% | 0.0% | 34.8% |
| 2010 | 1810 | 2,3,4,5 | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 4.4% | 3.7% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 4.4% | 0.7% | 0.1% | 0.0% | 0.0% | 9.1% | 0.0% | 35.8% | 3.6% | 0.0% | 36.7% |
| 2011 | 1514 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 2.8% | 3.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 3.1% | 0.6% | 0.5% | 0.0% | 0.0% | 12.9% | 0.0% | 21.9% | 4.4% | 0.0% | 49.5% |
| 2012 | 1569 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 2.4% | 0.0% | 1.7% | 0.0% | 0.0% | 0.0% | 5.5% | 1.1% | 0.3% | 0.0% | 0.0% | 13.0% | 0.0% | 17.6% | 15.0% | 0.0% | 41.7% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 1240 | | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 8.2% | 2.3% | 0.2% | 4.5% | 0.1% | 1.1% | 0.0% | 3.9% | 0.4% | 0.6% | 0.0% | 0.0% | 20.6% | 0.0% | 31.1% | 1.2% | 0.0% | 25.4% |
| 1979-1984 | 277 | | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 21.6% | 0.0% | 0.8% | 4.6% | 0.0% | 3.3% | 0.0% | 1.5% | 0.0% | 0.8% | 0.0% | 0.0% | 40.0% | 0.0% | 23.7% | 0.0% | 0.2% | 2.7% |
| 1985-1995 | 778 | | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 11.7% | 2.4% | 0.4% | 7.9% | 0.4% | 2.2% | 0.0% | 5.7% | 0.2% | 0.9% | 0.0% | 0.0% | 22.0% | 0.0% | 28.2% | 0.5% | 0.1% | 17.2% |
| 1996-1998 | 1131 | | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 1.4% | 2.0% | 0.0% | 2.4% | 0.0% | 0.5% | 0.1% | 0.6% | 0.3% | 0.3% | 0.0% | 0.0% | 26.4% | 0.0% | 32.2% | 0.8% | 0.0% | 32.8% |
| 1999-2013 | 1763 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 2.6% | 0.0% | 2.2% | 0.0% | 0.0% | 0.0% | 3.6% | 0.6% | 0.4% | 0.0% | 0.0% | 15.6% | 0.0% | 34.2% | 2.0% | 0.0% | 33.5% |

[1] Estimates for this year can only be used for distribution of fishing mortalities because the escapement data are insufficient.

*Appendix C24. Percent distribution of Nooksack Spring Yearling (Nooksack Spring Yearling) total fishing mortalities among fisheries and escapement.*

| Catch | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | 46 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | 229 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | 196 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | 260 | 2,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.9% | 0.8% | 2.3% | 18.5% | 0.4% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 3.5% | 0.0% | 10.4% | 0.0% | 0.0% | 61.9% |
| 1987 | 558 | 3,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 561 | 2,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 122 | 2,3,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.8% | 0.0% | 13.9% | 0.0% | 0.0% | 66.4% |
| 1990 | 85 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.2% | 1.2% | 0.0% | 40.0% | 1.2% | 8.2% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 23.5% | 0.0% | 2.4% | 0.0% | 0.0% | 14.1% |
| 1991 | 378 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 6.1% | 0.0% | 43.4% | 0.0% | 4.5% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 6.3% | 0.0% | 8.2% | 0.0% | 0.0% | 27.2% |
| 1992 | 1021 | 2,3,4,5 | 1.7% | 2.0% | 0.0% | 0.0% | 0.0% | 19.2% | 2.4% | 1.7% | 14.9% | 1.0% | 1.5% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.7% | 0.0% | 0.7% | 0.0% | 0.0% | 44.5% |
| 1993 | 643 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.8% | 7.9% | 3.3% | 16.0% | 0.0% | 5.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 12.9% | 0.0% | 6.2% | 0.0% | 0.0% | 43.1% |
| 1994 | 539 | 2,4,5 | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 0.0% | 5.9% | 30.6% | 0.0% | 0.6% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 3.9% | 0.0% | 6.7% | 0.0% | 0.0% | 46.6% |
| 1995 | 181 | 2,3,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 29.3% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.2% | 0.0% | 2.8% | 0.0% | 0.0% | 55.2% |
| 1996 | 202 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.0% | 0.0% | 16.3% | 0.0% | 0.0% | 1.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 0.0% | 0.5% | 0.0% | 0.0% | 73.3% |
| 1997 | 131 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.3% | 0.0% | 16.8% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.4% | 0.0% | 5.3% | 0.0% | 0.0% | 50.4% |
| 1998 | 115 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.0% | 0.0% | 27.0% | 0.0% | 4.3% | 4.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.3% | 0.0% | 7.8% | 0.0% | 0.0% | 38.3% |
| 1999 | 179 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 1.7% | 0.0% | 30.7% | 0.0% | 0.0% | 0.0% | 3.4% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 5.0% | 0.0% | 0.0% | 54.2% |
| 2000 | 147 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2001 | 31 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2002 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2004 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2005 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2006 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2007 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2008 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2009 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2010 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2011 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2012 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 321 | | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% | 3.7% | 2.9% | 1.1% | 24.4% | 0.2% | 2.1% | 0.4% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 10.2% | 0.0% | 5.8% | 0.0% | 0.0% | 47.9% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 404 | | 0.3% | 0.2% | 0.0% | 0.0% | 0.0% | 5.2% | 2.3% | 1.6% | 25.3% | 0.3% | 2.5% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 10.2% | 0.0% | 6.4% | 0.0% | 0.0% | 44.9% |
| 1996-1998 | 149 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.1% | 0.0% | 20.0% | 0.0% | 1.7% | 1.8% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 12.7% | 0.0% | 4.6% | 0.0% | 0.0% | 54.0% |
| 1999-2013 | 179 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 1.7% | 0.0% | 30.7% | 0.0% | 0.0% | 0.0% | 3.4% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 5.0% | 0.0% | 0.0% | 54.2% |

***Appendix C25. Percent distribution of Nooksack Spring Fingerling (Nooksack Spring Yearling) total fishing mortalities among fisheries and escapement.***

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | 11 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | 197 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | 508 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | 299 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | 62 | 2,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | 503 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | 1117 | 2,3,4 | 3.3% | 0.0% | 0.2% | 0.0% | 0.0% | 1.1% | 3.9% | 0.0% | 19.9% | 0.0% | 5.8% | 0.8% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 9.5% | 0.0% | 0.3% | 0.0% | 0.4% | 54.2% |
| 1997 | 2070 | 2,3,4,5 | 4.3% | 0.4% | 0.8% | 0.2% | 0.0% | 2.2% | 2.9% | 0.0% | 11.2% | 0.8% | 1.3% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 6.6% | 0.0% | 1.3% | 0.0% | 0.3% | 67.3% |
| 1998 | 1528 | 2,3,4,5 | 8.6% | 0.2% | 0.0% | 0.0% | 0.0% | 1.8% | 3.5% | 0.0% | 4.1% | 0.0% | 0.2% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.1% | 0.0% | 0.2% | 79.9% |
| 1999 | 1652 | 2,3,4,5 | 2.0% | 0.2% | 0.0% | 0.0% | 0.0% | 2.4% | 5.8% | 0.0% | 4.7% | 0.0% | 0.0% | 0.7% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 81.6% |
| 2000 | 940 | 2,3,4,5 | 5.1% | 0.2% | 0.0% | 0.0% | 0.0% | 20.5% | 5.0% | 0.0% | 14.9% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.2% | 0.0% | 0.6% | 52.6% |
| 2001 | 1408 | 2,3,4,5 | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 10.9% | 4.8% | 0.0% | 5.3% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 0.0% | 0.8% | 0.0% | 0.0% | 73.6% |
| 2002 | 1268 | 2,3,4,5 | 6.2% | 0.0% | 0.5% | 0.9% | 0.0% | 17.0% | 2.4% | 0.0% | 1.5% | 0.0% | 0.0% | 1.3% | 0.2% | 0.5% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.2% | 0.0% | 0.3% | 68.4% |
| 2003 | 782 | 2,3,4,5 | 3.6% | 0.0% | 0.0% | 0.0% | 0.0% | 13.6% | 2.9% | 0.0% | 8.1% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.3% | 0.0% | 1.3% | 0.0% | 0.1% | 66.5% |
| 2004 | 690 | 2,3,4,5 | 1.4% | 0.0% | 0.0% | 0.3% | 0.0% | 31.7% | 5.4% | 0.0% | 10.6% | 0.0% | 0.0% | 0.0% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 0.4% | 0.0% | 0.3% | 45.1% |
| 2005 | 859 | 2,3,4,5 | 3.7% | 0.1% | 0.0% | 0.2% | 0.0% | 32.6% | 4.2% | 0.0% | 9.0% | 0.0% | 0.5% | 0.0% | 0.5% | 0.2% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.8% | 0.0% | 0.1% | 47.0% |
| 2006 | 559 | 2,3,4,5 | 2.3% | 0.0% | 0.5% | 1.1% | 0.0% | 32.2% | 6.6% | 0.0% | 9.5% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 3.4% | 0.0% | 2.3% | 0.5% | 0.5% | 39.9% |
| 2007 | 605 | 2,3,4,5 | 5.8% | 0.2% | 0.5% | 0.3% | 0.0% | 24.1% | 9.4% | 0.0% | 10.9% | 0.0% | 0.2% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 6.0% | 0.0% | 0.7% | 0.3% | 0.2% | 41.2% |
| 2008 | 1058 | 2,3,4,5 | 1.6% | 0.2% | 0.0% | 0.4% | 0.0% | 19.9% | 13.5% | 0.0% | 15.1% | 0.0% | 0.0% | 0.0% | 1.3% | 0.5% | 0.0% | 0.0% | 0.0% | 7.0% | 0.0% | 2.2% | 0.2% | 0.2% | 37.9% |
| 2009 | 826 | 2,3,4,5 | 2.9% | 0.6% | 0.0% | 0.0% | 0.0% | 7.5% | 11.1% | 0.0% | 16.6% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 3.5% | 0.0% | 1.3% | 0.0% | 1.0% | 54.6% |
| 2010 | 850 | 2,3,4,5 | 3.4% | 0.4% | 0.0% | 0.8% | 0.0% | 22.0% | 11.1% | 0.0% | 3.3% | 0.0% | 0.0% | 0.4% | 2.5% | 0.5% | 0.0% | 0.0% | 0.0% | 3.4% | 0.0% | 0.7% | 0.0% | 0.0% | 51.6% |
| 2011 | 391 | 2,3,4,5 | 4.1% | 0.0% | 0.0% | 0.0% | 0.0% | 20.5% | 7.4% | 0.0% | 21.7% | 0.0% | 0.5% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 0.0% | 3.1% | 0.0% | 0.3% | 35.8% |
| 2012 | 398 | 2,3,4,5 | 5.8% | 1.0% | 0.8% | 0.0% | 0.0% | 17.8% | 13.8% | 0.0% | 12.6% | 0.0% | 2.0% | 0.0% | 4.8% | 0.0% | 0.0% | 0.0% | 0.0% | 15.1% | 0.0% | 5.0% | 0.0% | 0.5% | 20.9% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 1000 | | 3.9% | 0.2% | 0.2% | 0.2% | 0.0% | 16.4% | 6.7% | 0.0% | 10.5% | 0.0% | 0.6% | 0.2% | 1.2% | 0.1% | 0.0% | 0.0% | 0.0% | 4.2% | 0.0% | 1.2% | 0.1% | 0.3% | 54.0% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1996-1998 | 1572 | | 5.4% | 0.2% | 0.3% | 0.1% | 0.0% | 1.7% | 3.4% | 0.0% | 11.7% | 0.3% | 2.4% | 0.3% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 5.7% | 0.0% | 0.6% | 0.0% | 0.3% | 67.1% |
| 1999-2013 | 878 | | 3.5% | 0.2% | 0.2% | 0.3% | 0.0% | 19.5% | 7.4% | 0.0% | 10.3% | 0.0% | 0.2% | 0.2% | 1.3% | 0.1% | 0.0% | 0.0% | 0.0% | 3.9% | 0.0% | 1.4% | 0.1% | 0.3% | 51.2% |

*Appendix C26. Percent distribution of Puntledge River Summer (Lower Strait of Georgia Hatchery) total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 1581 | 2,3,4 | 1.8% | 0.3% | 0.3% | 2.7% | 0.0% | 1.1% | 0.0% | 19.4% | 19.2% | 8.4% | 12.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 34.4% |
| 1980 | 920 | 2,3,4,5 | 2.4% | 0.0% | 0.4% | 2.0% | 0.0% | 4.8% | 0.0% | 14.7% | 23.9% | 5.8% | 9.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 36.4% |
| 1981 | 589 | 2,3,4,5 | 0.8% | 0.0% | 0.0% | 4.9% | 0.0% | 0.0% | 0.0% | 20.9% | 44.1% | 7.6% | 8.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.9% |
| 1982 | 551 | 2,3,4,5 | 1.1% | 0.5% | 0.0% | 4.2% | 0.0% | 2.2% | 0.0% | 6.0% | 20.1% | 16.5% | 24.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.4% |
| 1983 | 537 | 2,3,4,5 | 2.0% | 0.2% | 0.0% | 8.4% | 0.0% | 2.8% | 0.0% | 12.5% | 16.6% | 17.1% | 7.8% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 32.0% |
| 1984 | 319 | 2,3,4,5 | 0.0% | 0.9% | 0.0% | 2.2% | 0.0% | 2.2% | 0.0% | 6.0% | 19.7% | 5.6% | 6.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 56.4% |
| 1985 | 159 | 2,3,4,5 | 13.2% | 0.6% | 3.8% | 6.3% | 0.0% | 0.0% | 0.0% | 0.0% | 37.1% | 1.3% | 12.6% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 22.0% |
| 1986 | 205 | 2,3,4,5 | 5.9% | 0.0% | 5.4% | 2.4% | 0.0% | 2.4% | 0.0% | 12.7% | 32.2% | 4.4% | 11.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 22.9% |
| 1987 | 167 | 2,3,4,5 | 3.0% | 1.2% | 0.0% | 15.0% | 3.0% | 0.0% | 4.2% | 0.0% | 25.7% | 2.4% | 6.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 38.9% |
| 1988 | 104 | 2,3,4,5 | 11.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 36.5% | 0.0% | 5.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 45.2% |
| 1989 | 77 | 2,3,4,5 | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 53.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.2% | 39.0% |
| 1990 | 101 | 2,3,4,5 | 7.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.9% | 3.0% | 15.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 58.4% |
| 1991 | 128 | 2,3,4,5 | 5.5% | 7.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 43.8% | 0.0% | 10.2% | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 30.5% |
| 1992 | 101 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.0% | 45.5% | 0.0% | 18.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 32.7% |
| 1993 | 82 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 59.8% | 0.0% | 7.3% | 4.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 28.0% |
| 1994 | 32 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 65.6% | 0.0% | 9.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.0% |
| 1995 | 46 | 2,3,4,5 | 4.3% | 2.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 41.3% | 0.0% | 15.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 37.0% |
| 1996 | 52 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 44.2% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 53.8% |
| 1997 | 27 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.8% | 0.0% | 7.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 77.8% |
| 1998 | 9 | 2,4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1999 | 51 | 2,3,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.6% | 0.0% | 3.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 78.4% |
| 2000 | 64 | 2,3,4 | 1.6% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 84.4% |
| 2001 | 213 | 2,3,4,5 | 2.8% | 0.5% | 0.0% | 0.0% | 0.0% | 2.3% | 0.0% | 0.0% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 90.1% |
| 2002 | 121 | 2,3,4,5 | 5.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.6% | 0.0% | 5.0% | 0.0% | 0.0% | 9.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 67.8% |
| 2003 | 123 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.9% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.5% | 74.8% |
| 2004 | 105 | 2,3,4,5 | 16.2% | 1.0% | 0.0% | 0.0% | 0.0% | 2.9% | 0.0% | 0.0% | 11.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 68.6% |
| 2005 | 332 | 2,3,4,5 | 1.5% | 0.0% | 0.0% | 1.2% | 0.0% | 0.6% | 0.0% | 0.0% | 27.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 69.6% |
| 2006 | 303 | 2,3,4,5 | 7.9% | 2.3% | 0.0% | 0.7% | 0.0% | 0.0% | 2.0% | 0.0% | 6.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 80.2% |
| 2007 | 435 | 2,3,4,5 | 11.5% | 8.5% | 1.6% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 6.2% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 70.8% |
| 2008 | 270 | 2,3,4,5 | 1.5% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 5.2% | 0.0% | 12.6% | 0.0% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 76.7% |
| 2009 | 610 | 2,3,4,5 | 5.2% | 1.8% | 0.2% | 1.1% | 0.3% | 0.0% | 0.0% | 0.0% | 14.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 76.7% |
| 2010 | 483 | 2,3,4,5 | 6.8% | 0.8% | 0.0% | 0.0% | 1.0% | 1.7% | 1.0% | 0.0% | 14.5% | 0.0% | 0.0% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 71.0% |
| 2011 | 332 | 2,3,4,5 | 6.6% | 3.6% | 0.3% | 1.2% | 1.5% | 0.0% | 0.0% | 0.0% | 11.4% | 0.0% | 0.0% | 8.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 66.9% |
| 2012 | 118 | 2,3,4,5 | 21.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.1% | 0.0% | 54.2% | 0.0% | 0.0% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.3% |
| 2013 | 246 | 2,3,4,5 | 0.0% | 2.0% | 0.0% | 1.6% | 1.6% | 0.0% | 1.6% | 0.0% | 28.5% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 64.2% |
| 1979-2013 | 282 |  | 4.4% | 1.1% | 0.4% | 1.6% | 0.2% | 0.7% | 0.9% | 2.8% | 26.6% | 2.1% | 5.8% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 51.9% |
| 1979-1984 | 750 |  | 1.4% | 0.3% | 0.1% | 4.0% | 0.0% | 2.2% | 0.0% | 13.2% | 23.9% | 10.2% | 11.5% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 32.9% |
| 1985-1995 | 109 |  | 4.9% | 1.1% | 0.8% | 2.2% | 0.3% | 0.2% | 0.4% | 1.4% | 41.4% | 1.0% | 10.3% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 34.5% |
| 1996-1998 | 40 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 29.5% | 0.0% | 4.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 65.8% |
| 1999-2013 | 254 |  | 5.9% | 1.5% | 0.1% | 0.4% | 0.3% | 0.5% | 1.8% | 0.0% | 16.3% | 0.0% | 0.3% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 70.4% |

*Appendix C27. Percent distribution of Queets Fall Fingerling (Washington Coastal Wild) total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 2 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 12 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 111 | 2,3,4 | 11.7% | 0.0% | 0.0% | 17.1% | 0.0% | 12.6% | 0.0% | 0.0% | 0.0% | 1.8% | 2.7% | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 0.0% | 3.6% | 0.0% | 27.9% | 0.0% | 0.0% | 20.7% |
| 1982 | 246 | 2,3,4,5 | 15.4% | 1.6% | 0.0% | 19.1% | 0.0% | 12.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 26.0% | 0.0% | 0.0% | 22.8% |
| 1983 | 199 | 2,3,4,5,6 | 47.2% | 0.0% | 0.0% | 13.1% | 0.0% | 5.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 16.1% | 0.0% | 0.0% | 15.1% |
| 1984 | 154 | 2,3,4,5,6 | 16.2% | 0.6% | 0.0% | 22.1% | 2.6% | 7.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 26.6% | 0.0% | 0.0% | 21.4% |
| 1985 | 293 | 2,3,4,5,6 | 19.8% | 0.0% | 0.0% | 33.4% | 0.0% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 12.3% | 0.0% | 0.7% | 28.3% |
| 1986 | 331 | 3,4,5,6 | 25.7% | 0.0% | 1.2% | 11.2% | 0.0% | 6.9% | 0.0% | 0.0% | 0.0% | 1.5% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.1% | 0.0% | 0.3% | 43.2% |
| 1987 | 616 | 2,4,5,6 | 27.9% | 1.8% | 0.0% | 11.7% | 1.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.8% | 0.5% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 20.0% | 0.0% | 0.0% | 33.8% |
| 1988 | 825 | 2,3,5,6 | 17.8% | 1.7% | 1.5% | 9.3% | 0.2% | 5.6% | 1.0% | 0.0% | 0.0% | 2.4% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.4% | 0.0% | 15.0% | 0.0% | 0.0% | 41.7% |
| 1989 | 659 | 2,3,4,6 | 16.7% | 0.2% | 0.2% | 10.6% | 1.1% | 8.8% | 0.0% | 0.0% | 0.0% | 0.6% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 24.4% | 0.0% | 0.0% | 35.5% |
| 1990 | 1363 | 2,3,4,5 | 15.0% | 0.6% | 0.1% | 6.3% | 2.4% | 7.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.2% | 0.0% | 0.0% | 54.7% |
| 1991 | 1199 | 2,3,4,5,6 | 24.4% | 0.3% | 1.1% | 10.1% | 1.3% | 5.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 14.6% | 0.0% | 0.0% | 42.5% |
| 1992 | 770 | 2,3,4,5,6 | 13.6% | 5.7% | 2.2% | 8.6% | 1.7% | 17.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.0% | 0.0% | 0.0% | 34.2% |
| 1993 | 709 | 2,3,4,5,6 | 19.0% | 2.3% | 0.6% | 15.0% | 1.8% | 13.1% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.4% | 1.8% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 14.1% | 0.0% | 0.0% | 30.7% |
| 1994 | 1218 | 2,3,4,5,6 | 23.3% | 1.2% | 0.4% | 21.3% | 1.5% | 4.0% | 1.0% | 0.0% | 0.2% | 0.2% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.6% | 0.0% | 0.0% | 27.9% |
| 1995 | 831 | 2,3,4,5,6 | 22.0% | 0.0% | 1.7% | 7.5% | 3.7% | 0.7% | 0.4% | 0.0% | 0.2% | 0.0% | 0.2% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 30.0% | 0.0% | 0.0% | 32.5% |
| 1996 | 796 | 2,3,4,5,6 | 18.2% | 0.0% | 1.4% | 0.8% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.0% | 0.5% | 0.0% | 62.9% |
| 1997 | 943 | 2,3,4,5,6 | 37.3% | 0.5% | 0.0% | 5.4% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.1% | 0.0% | 0.0% | 35.7% |
| 1998 | 671 | 2,3,4,5,6 | 25.3% | 0.0% | 3.1% | 19.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.6% | 4.3% | 0.0% | 35.2% |
| 1999 | 821 | 2,3,4,5,6 | 12.9% | 0.0% | 1.7% | 6.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.3% | 0.0% | 0.0% | 70.2% |
| 2000 | 497 | 2,3,4,5,6 | 26.4% | 0.0% | 12.1% | 13.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.4% | 0.0% | 0.0% | 44.7% |
| 2001 | 501 | 2,3,4,5,6 | 28.5% | 0.0% | 6.8% | 4.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 38.1% | 0.0% | 0.0% | 20.0% |
| 2002 | 1783 | 2,3,4,5,6 | 29.3% | 0.0% | 3.6% | 5.2% | 2.8% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 23.1% | 0.0% | 14.8% | 20.8% |
| 2003 | 1577 | 2,3,4,5,6 | 23.0% | 0.1% | 3.9% | 11.7% | 5.8% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 19.9% | 0.0% | 0.4% | 34.2% |
| 2004 | 3419 | 2,3,4,5,6 | 13.9% | 0.8% | 2.6% | 5.8% | 6.8% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.0% | 0.0% | 0.1% | 59.4% |
| 2005 | 2884 | 2,3,4,5,6 | 14.4% | 0.0% | 3.2% | 6.5% | 2.8% | 3.2% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.1% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.6% | 0.0% | 0.1% | 51.3% |
| 2006 | 1553 | 2,3,4,5,6 | 19.4% | 0.1% | 2.1% | 10.1% | 2.1% | 3.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.1% | 0.0% | 0.8% | 48.5% |
| 2007 | 753 | 2,3,4,5,6 | 31.1% | 0.0% | 4.1% | 10.6% | 14.6% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.7% | 0.0% | 0.0% | 23.2% |
| 2008 | 1090 | 2,3,4,5,6 | 17.4% | 0.0% | 1.3% | 8.0% | 4.8% | 0.7% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.1% | 0.0% | 0.0% | 46.7% |
| 2009 | 1471 | 2,3,4,5,6 | 30.7% | 1.9% | 3.6% | 10.8% | 3.7% | 0.1% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 19.9% | 0.0% | 0.3% | 27.5% |
| 2010 | 2619 | 2,3,4,5,6 | 20.5% | 0.0% | 4.4% | 4.4% | 4.6% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.9% | 0.0% | 0.0% | 50.3% |
| 2011 | 2714 | 2,3,4,5,6 | 23.6% | 0.1% | 3.6% | 6.2% | 4.8% | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.9% | 0.0% | 0.0% | 40.0% |
| 2012 | 2356 | 3,4,5,6 | 39.7% | 0.2% | 2.8% | 9.1% | 7.7% | 0.9% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.0% | 0.0% | 0.9% | 20.8% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 1124 | | 22.7% | 0.6% | 2.2% | 11.1% | 2.4% | 3.8% | 0.2% | 0.0% | 0.0% | 0.3% | 0.3% | 0.1% | 0.3% | 0.2% | 0.1% | 0.0% | 0.1% | 0.4% | 0.0% | 17.8% | 0.2% | 0.6% | 36.8% |
| 1979-1984 | 178 | | 22.7% | 0.6% | 0.0% | 17.8% | 0.6% | 9.5% | 0.0% | 0.0% | 0.0% | 0.5% | 1.4% | 0.3% | 0.8% | 0.0% | 0.5% | 0.0% | 0.4% | 0.9% | 0.0% | 24.2% | 0.0% | 0.0% | 20.0% |
| 1985-1995 | 801 | | 20.5% | 1.3% | 0.8% | 13.2% | 1.3% | 6.6% | 0.2% | 0.0% | 0.0% | 0.6% | 0.4% | 0.0% | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 17.0% | 0.0% | 0.1% | 36.8% |
| 1996-1998 | 803 | | 27.0% | 0.2% | 1.5% | 8.6% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.9% | 1.6% | 0.0% | 44.6% |
| 1999-2013 | 1717 | | 23.6% | 0.2% | 4.0% | 8.1% | 4.3% | 0.7% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.4% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.9% | 0.0% | 1.2% | 39.8% |

*Appendix C28. Percent distribution of Quinsam River Fall (Upper Strait of Georgia) total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. | | |
| 1979 | 1690 | 2,3,4,5 | 6.4% | 4.5% | 1.1% | 6.1% | 0.0% | 0.1% | 0.0% | 2.4% | 5.3% | 10.7% | 22.7% | 2.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 38.2% | | |
| 1980 | 1715 | 2,3,4,5,6 | 15.0% | 4.8% | 3.1% | 10.5% | 0.0% | 0.0% | 0.0% | 1.5% | 7.3% | 16.6% | 21.2% | 4.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.0% | | |
| 1981 | 1718 | 2,3,4,5,6 | 11.6% | 4.4% | 1.5% | 13.1% | 0.0% | 0.5% | 0.0% | 2.1% | 11.6% | 12.3% | 16.5% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 21.8% | | |
| 1982 | 1266 | 2,3,4,5,6 | 19.6% | 6.3% | 4.7% | 8.4% | 0.0% | 0.3% | 0.0% | 0.0% | 4.6% | 6.5% | 25.9% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 21.5% | | |
| 1983 | 1330 | 2,3,4,5,6 | 25.1% | 1.2% | 0.3% | 14.4% | 0.0% | 0.7% | 0.0% | 0.2% | 5.7% | 11.5% | 24.3% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.0% | | |
| 1984 | 1289 | 2,3,4,5,6 | 17.0% | 4.6% | 5.6% | 6.5% | 0.0% | 0.8% | 0.0% | 0.9% | 9.8% | 5.0% | 20.3% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 27.7% | | |
| 1985 | 1796 | 2,3,4,5,6 | 28.3% | 8.3% | 4.1% | 4.9% | 0.0% | 0.1% | 0.0% | 0.0% | 5.0% | 3.5% | 18.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 27.1% | | |
| 1986 | 1908 | 2,3,4,5,6 | 15.5% | 9.7% | 3.1% | 6.7% | 0.0% | 0.0% | 0.0% | 0.2% | 7.1% | 7.3% | 24.4% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 24.5% | | |
| 1987 | 1640 | 2,3,4,5,6 | 15.1% | 8.4% | 2.9% | 7.0% | 0.0% | 0.4% | 0.3% | 0.2% | 6.9% | 6.8% | 20.7% | 3.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 28.0% | | |
| 1988 | 1707 | 2,3,4,5,6 | 19.4% | 4.9% | 1.1% | 6.9% | 0.0% | 0.8% | 0.9% | 0.2% | 5.5% | 2.6% | 9.1% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.3% | 46.9% | | |
| 1989 | 1911 | 2,3,4,5,6 | 14.0% | 8.6% | 2.6% | 4.0% | 0.4% | 0.3% | 0.0% | 0.0% | 7.9% | 2.0% | 16.4% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.2% | 41.1% | | |
| 1990 | 1307 | 2,3,4,5,6 | 17.1% | 5.1% | 0.5% | 6.7% | 0.3% | 1.4% | 0.0% | 1.5% | 7.5% | 5.0% | 13.7% | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 37.3% | | |
| 1991 | 846 | 2,3,4,5,6 | 11.0% | 5.4% | 1.5% | 6.4% | 0.0% | 0.5% | 0.7% | 0.7% | 9.1% | 10.3% | 13.2% | 6.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 34.5% | | |
| 1992 | 684 | 2,3,4,5,6 | 15.2% | 2.6% | 1.9% | 11.1% | 0.0% | 0.3% | 0.0% | 0.4% | 5.4% | 10.1% | 9.9% | 3.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 38.5% | | |
| 1993 | 394 | 2,3,4,5,6 | 8.4% | 6.3% | 1.3% | 6.3% | 0.0% | 1.3% | 0.0% | 0.8% | 13.5% | 6.6% | 21.1% | 6.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 28.4% | | |
| 1994 | 574 | 2,3,4,5,6 | 3.1% | 48.3% | 2.4% | 6.1% | 0.0% | 0.0% | 0.0% | 0.0% | 4.0% | 0.7% | 9.8% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 23.9% | | |
| 1995 | 291 | 2,3,4,5,6 | 8.2% | 7.9% | 0.0% | 11.3% | 2.4% | 0.0% | 0.0% | 0.0% | 8.9% | 0.0% | 19.2% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 39.9% | | |
| 1996 | 294 | 2,3,4,5,6 | 6.8% | 1.0% | 0.0% | 1.4% | 0.3% | 0.0% | 0.0% | 0.0% | 9.9% | 0.0% | 19.4% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 58.5% | | |
| 1997 | 469 | 2,3,4,5,6 | 11.1% | 4.5% | 3.2% | 3.6% | 1.1% | 0.4% | 5.3% | 0.0% | 13.4% | 2.6% | 4.3% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 48.0% | | |
| 1998 | 599 | 2,3,4,5,6 | 15.5% | 2.8% | 2.5% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 9.7% | 0.0% | 0.3% | 4.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 62.3% | | |
| 1999 | 1000 | 2,3,4,5,6 | 9.5% | 2.0% | 4.9% | 2.2% | 2.7% | 0.0% | 0.0% | 0.0% | 13.0% | 0.3% | 1.2% | 7.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 55.9% | | |
| 2000 | 840 | 2,3,4,5,6 | 14.4% | 3.0% | 4.6% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 5.1% | 0.0% | 1.7% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 66.2% | | |
| 2001 | 1265 | 2,3,4,5,6 | 11.0% | 2.1% | 1.7% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 0.0% | 0.6% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 77.7% | | |
| 2002 | 928 | 2,3,4,5,6 | 16.1% | 3.4% | 0.9% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 6.8% | 0.1% | 0.0% | 7.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 64.0% | | |
| 2003 | 535 | 2,3,4,5,6 | 20.9% | 2.2% | 0.9% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 4.7% | 0.0% | 0.0% | 16.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 53.5% | | |
| 2004 | 807 | 2,3,4,5,6 | 7.8% | 20.2% | 1.7% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 4.1% | 0.0% | 2.4% | 11.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 52.2% | | |
| 2005 | 907 | 2,3,4,5,6 | 18.2% | 2.2% | 3.0% | 0.4% | 0.9% | 0.0% | 0.0% | 0.0% | 8.9% | 0.0% | 1.3% | 7.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 57.0% | | |
| 2006 | 832 | 2,3,4,5,6 | 17.5% | 5.2% | 1.3% | 0.7% | 4.3% | 0.0% | 0.7% | 0.0% | 5.8% | 0.0% | 0.0% | 2.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 61.5% | | |
| 2007 | 628 | 2,3,4,5,6 | 21.7% | 5.6% | 1.1% | 3.2% | 0.8% | 0.0% | 0.0% | 0.0% | 8.4% | 0.0% | 1.0% | 9.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 48.6% | | |
| 2008 | 411 | 2,3,4,5,6 | 13.4% | 2.2% | 0.2% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 4.9% | 0.0% | 0.0% | 7.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 71.3% | | |
| 2009 | 462 | 2,3,4,5,6 | 11.7% | 4.3% | 2.2% | 0.9% | 5.2% | 0.0% | 1.5% | 0.0% | 10.4% | 0.0% | 1.5% | 4.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 58.0% | | |
| 2010 | 474 | 2,3,4,5,6 | 8.4% | 6.5% | 1.1% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 25.1% | 0.0% | 0.0% | 5.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.4% | 50.8% | | |
| 2011 | 760 | 2,3,4,5,6 | 10.9% | 8.8% | 0.7% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 5.0% | 0.0% | 0.0% | 12.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 59.9% | | |
| 2012 | 810 | 2,3,4,5,6 | 18.1% | 6.4% | 2.6% | 0.9% | 0.7% | 0.0% | 0.0% | 0.0% | 7.2% | 0.0% | 0.0% | 9.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 54.8% | | |
| 2013 | 738 | 2,3,4,5,6 | 10.8% | 6.6% | 1.1% | 0.4% | 0.7% | 0.0% | 0.0% | 0.0% | 3.9% | 0.0% | 0.0% | 8.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 67.9% | | |
| 1979-2013 | 995 | | 14.1% | 6.6% | 2.0% | 4.3% | 0.7% | 0.2% | 0.3% | 0.3% | 7.8% | 3.4% | 9.7% | 5.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 45.1% | | |
| 1979-1984 | 1501 | | 15.8% | 4.3% | 2.7% | 9.8% | 0.0% | 0.4% | 0.0% | 1.2% | 7.4% | 10.4% | 21.8% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 23.4% | | |
| 1985-1995 | 1187 | | 14.1% | 10.5% | 1.9% | 7.0% | 0.3% | 0.5% | 0.2% | 0.4% | 7.3% | 5.0% | 16.0% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 33.6% | | |
| 1996-1998 | 454 | | 11.1% | 2.8% | 1.9% | 1.7% | 0.9% | 0.1% | 1.8% | 0.0% | 11.0% | 0.9% | 8.0% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 56.2% | | |
| 1999-2013 | 760 | | 14.0% | 5.4% | 1.9% | 0.7% | 1.3% | 0.0% | 0.1% | 0.0% | 7.7% | 0.0% | 0.6% | 7.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.3% | 60.0% | | |

*Appendix C29. Percent distribution of Robertson Creek Fall (WCVI Hatchery and Natural) total fishing mortalities among fisheries and escapement.*

| | | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Catch Year | Estimated # of CWTs | Ages Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 5482 | 2,3,4,5 | 21.5% | 0.6% | 0.7% | 11.9% | 0.0% | 8.3% | 0.1% | 0.5% | 1.3% | 11.2% | 9.4% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 5.0% | 0.0% | 29.2% |
| 1980 | 5090 | 2,3,4,5 | 28.0% | 6.3% | 1.1% | 8.5% | 0.0% | 7.3% | 0.5% | 0.0% | 0.2% | 8.7% | 5.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 9.5% | 3.0% | 0.0% | 20.9% |
| 1981 | 3129 | 2,3,4,5 | 31.7% | 1.8% | 1.0% | 13.7% | 0.0% | 5.8% | 0.5% | 0.4% | 1.1% | 8.2% | 5.8% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.1% | 0.0% | 10.2% | 4.4% | 0.3% | 13.5% |
| 1982 | 4748 | 2,3,4,5 | 29.3% | 3.7% | 1.6% | 14.6% | 0.0% | 6.0% | 0.4% | 0.1% | 0.7% | 7.0% | 5.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.1% | 0.0% | 12.4% | 5.8% | 0.0% | 11.6% |
| 1983 | 4090 | 2,3,4,5 | 41.2% | 2.8% | 0.4% | 11.1% | 0.0% | 5.7% | 0.0% | 0.0% | 0.4% | 7.9% | 2.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 15.0% | 4.5% | 0.2% | 7.8% |
| 1984 | 3310 | 2,3,4,5 | 29.8% | 4.3% | 0.1% | 13.7% | 0.0% | 6.7% | 0.0% | 0.0% | 1.1% | 3.9% | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.0% | 14.6% | 0.1% | 7.2% |
| 1985 | 1690 | 2,3,4,5 | 19.9% | 13.3% | 0.0% | 16.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.6% | 0.9% | 5.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.2% | 0.0% | 1.1% | 14.9% | 0.5% | 24.3% |
| 1986 | 925 | 2,3,4,5 | 15.8% | 8.1% | 0.5% | 8.0% | 0.8% | 6.1% | 0.6% | 0.0% | 1.4% | 0.9% | 3.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 1.4% | 0.0% | 0.3% | 27.7% | 0.0% | 24.2% |
| 1987 | 1624 | 2,3,4,5 | 10.4% | 3.2% | 1.0% | 7.4% | 0.0% | 2.6% | 0.2% | 0.0% | 1.1% | 3.4% | 3.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.1% | 0.0% | 0.0% | 19.5% | 0.1% | 47.5% |
| 1988 | 3135 | 2,3,4,5 | 11.4% | 4.4% | 1.3% | 7.7% | 1.0% | 4.9% | 4.6% | 0.0% | 1.0% | 1.4% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.3% | 0.0% | 6.5% | 12.0% | 0.8% | 40.2% |
| 1989 | 6639 | 2,3,4,5 | 10.1% | 7.5% | 0.4% | 9.5% | 0.5% | 2.5% | 1.8% | 0.0% | 1.2% | 1.6% | 2.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.0% | 16.3% | 16.3% | 0.3% | 29.8% |
| 1990 | 11184 | 2,3,4,5 | 19.1% | 2.4% | 2.0% | 9.1% | 0.8% | 6.2% | 1.4% | 0.0% | 0.4% | 2.3% | 2.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.4% | 7.8% | 0.3% | 38.5% |
| 1991 | 13867 | 2,3,4,5 | 19.4% | 2.4% | 3.2% | 9.7% | 0.5% | 4.9% | 1.4% | 0.0% | 0.5% | 2.6% | 1.9% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.0% | 13.4% | 12.5% | 0.3% | 26.8% |
| 1992 | 11372 | 2,3,4,5 | 15.3% | 15.8% | 1.6% | 6.8% | 0.9% | 17.1% | 1.9% | 0.0% | 0.2% | 2.8% | 1.2% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.2% | 4.9% | 0.1% | 30.8% |
| 1993 | 6723 | 2,3,4,5 | 16.1% | 2.1% | 2.4% | 7.7% | 0.8% | 14.6% | 2.4% | 0.0% | 0.8% | 2.1% | 1.1% | 0.2% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 6.8% | 12.1% | 0.3% | 30.2% |
| 1994 | 3794 | 2,3,4,5 | 17.8% | 6.4% | 3.9% | 9.2% | 0.4% | 4.9% | 3.8% | 0.0% | 0.6% | 1.2% | 1.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 11.1% | 15.6% | 0.3% | 23.4% |
| 1995 | 1529 | 2,3,4,5 | 14.8% | 0.0% | 4.2% | 3.0% | 1.8% | 1.5% | 2.7% | 0.0% | 1.7% | 0.3% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 5.7% | 8.9% | 0.3% | 54.2% |
| 1996 | 856 | 2,3,4,5 | 8.6% | 0.1% | 4.1% | 2.6% | 0.5% | 0.7% | 0.0% | 0.0% | 4.1% | 0.5% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 0.0% | 75.0% |
| 1997 | 2258 | 2,3,4,5 | 15.0% | 3.7% | 4.7% | 4.8% | 1.5% | 0.1% | 1.8% | 0.0% | 1.2% | 1.8% | 0.6% | 1.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.8% | 17.1% | 0.1% | 40.5% |
| 1998 | 3208 | 2,3,4,5 | 17.2% | 1.7% | 5.2% | 5.5% | 3.0% | 0.0% | 4.8% | 0.0% | 0.7% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 4.1% | 17.0% | 0.1% | 40.3% |
| 1999 | 1260 | 2,3,4,5 | 12.4% | 1.1% | 7.5% | 5.3% | 6.7% | 0.0% | 3.3% | 0.0% | 1.0% | 0.2% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.2% | 18.2% | 0.0% | 37.7% |
| 2000 | 254 | 2,3,4,5 | 6.3% | 0.0% | 0.0% | 0.0% | 4.7% | 0.0% | 0.0% | 0.0% | 13.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 76.0% |
| 2001 | 954 | 2,3,4,5 | 4.2% | 0.0% | 2.9% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 3.5% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 84.7% |
| 2002 | 2111 | 2,3,4,5 | 12.9% | 0.6% | 1.8% | 3.8% | 2.1% | 0.3% | 3.0% | 0.0% | 0.7% | 0.1% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.9% | 14.9% | 0.0% | 50.7% |
| 2003 | 3015 | 2,3,4,5 | 14.5% | 2.2% | 3.5% | 0.8% | 1.6% | 0.0% | 2.0% | 0.0% | 0.7% | 0.0% | 0.0% | 2.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.2% | 15.2% | 0.0% | 48.6% |
| 2004 | 5035 | 2,3,4,5 | 13.4% | 8.4% | 2.9% | 2.7% | 1.5% | 0.1% | 1.4% | 0.0% | 2.3% | 0.0% | 0.0% | 2.8% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.3% | 13.0% | 0.7% | 39.4% |
| 2005 | 3231 | 2,3,4,5 | 15.2% | 1.9% | 4.2% | 3.1% | 4.4% | 0.0% | 1.9% | 0.0% | 2.8% | 0.0% | 0.0% | 5.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 30.1% | 8.0% | 0.4% | 22.8% |
| 2006 | 2854 | 2,3,4,5 | 11.7% | 2.6% | 2.7% | 2.6% | 3.0% | 0.0% | 3.8% | 0.0% | 2.6% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 24.7% | 10.9% | 0.2% | 33.3% |
| 2007 | 2284 | 2,3,4,5 | 16.5% | 3.4% | 3.6% | 5.2% | 5.4% | 0.1% | 4.2% | 0.0% | 2.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.4% | 12.5% | 0.0% | 20.2% |
| 2008 | 1621 | 2,3,4,5 | 10.1% | 0.5% | 1.5% | 2.6% | 2.5% | 0.0% | 1.2% | 0.0% | 2.2% | 0.0% | 0.0% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.0% | 13.1% | 0.1% | 43.1% |
| 2009 | 1456 | 2,3,4,5 | 13.1% | 7.0% | 2.7% | 2.1% | 6.1% | 0.0% | 4.3% | 0.0% | 3.5% | 0.0% | 0.0% | 5.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.3% | 12.0% | 0.9% | 36.9% |
| 2010 | 1377 | 2,3,4,5 | 7.8% | 0.1% | 3.8% | 3.1% | 4.6% | 0.7% | 2.5% | 0.0% | 4.4% | 0.0% | 0.0% | 2.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 4.4% | 3.0% | 0.4% | 62.2% |
| 2011 | 2394 | 2,3,4,5 | 13.8% | 2.0% | 1.5% | 3.5% | 3.5% | 0.2% | 5.2% | 0.0% | 3.0% | 0.0% | 0.0% | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 16.8% | 16.3% | 0.1% | 29.9% |
| 2012 | 1924 | 2,3,4,5 | 14.0% | 3.7% | 1.2% | 3.0% | 2.7% | 0.2% | 4.4% | 0.0% | 4.3% | 0.0% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.1% | 16.0% | 0.1% | 31.7% |
| 2013 | 1427 | 2,3,4,5 | 11.1% | 4.2% | 1.5% | 1.1% | 2.0% | 0.0% | 2.5% | 0.0% | 8.3% | 0.0% | 0.0% | 2.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 0.0% | 64.2% |
| 1979-2013 | 3596 | | 16.3% | 3.7% | 2.3% | 6.3% | 1.8% | 3.1% | 2.0% | 0.0% | 2.1% | 2.0% | 1.7% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.1% | 0.0% | 9.0% | 10.9% | 0.2% | 37.1% |
| 1979-1984 | 4308 | | 30.3% | 3.3% | 0.8% | 12.2% | 0.0% | 6.6% | 0.2% | 0.2% | 0.8% | 7.8% | 5.5% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 10.4% | 6.2% | 0.1% | 15.0% |
| 1985-1995 | 5680 | | 15.5% | 6.0% | 1.9% | 8.6% | 0.7% | 6.1% | 1.9% | 0.0% | 0.9% | 1.8% | 2.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.2% | 0.0% | 6.3% | 13.8% | 0.3% | 33.6% |
| 1996-1998 | 2107 | | 13.6% | 1.8% | 4.7% | 4.3% | 1.6% | 0.3% | 2.2% | 0.0% | 2.0% | 0.8% | 0.2% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.3% | 12.0% | 0.1% | 51.9% |
| 1999-2013 | 2080 | | 11.8% | 2.5% | 2.8% | 2.6% | 3.4% | 0.1% | 2.8% | 0.0% | 3.6% | 0.0% | 0.0% | 2.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 11.7% | 10.5% | 0.2% | 45.4% |

*Appendix C30. Percent distribution of Samish Fall Fingerling (Nooksack Fall Fingerling) total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 1964 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 83 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 1605 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | 5422 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | 6375 | 4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | 377 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 76 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 1019 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 2061 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 9.0% | 1.8% | 1.3% | 18.1% | 0.2% | 3.3% | 0.2% | 7.9% | 0.0% | 0.0% | 0.0% | 0.0% | 11.0% | 0.0% | 32.8% | 0.0% | 0.0% | 14.2% |
| 1990 | 2504 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.6% | 0.0% | 20.6% | 2.1% | 3.6% | 10.9% | 0.1% | 1.4% | 0.0% | 9.3% | 0.1% | 0.2% | 0.0% | 0.0% | 8.2% | 0.0% | 28.1% | 0.0% | 0.0% | 14.6% |
| 1991 | 1042 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.3% | 3.4% | 1.9% | 11.0% | 0.1% | 2.8% | 0.0% | 8.8% | 0.7% | 0.4% | 0.0% | 0.0% | 9.9% | 0.0% | 21.5% | 0.5% | 0.8% | 24.0% |
| 1992 | 772 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.9% | 0.8% | 2.3% | 18.7% | 0.0% | 1.8% | 0.0% | 8.8% | 0.5% | 0.4% | 0.0% | 0.1% | 21.5% | 0.0% | 13.2% | 0.0% | 0.5% | 20.5% |
| 1993 | 1241 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 13.6% | 7.9% | 3.6% | 19.9% | 0.2% | 2.5% | 0.0% | 3.7% | 0.1% | 0.2% | 0.0% | 0.2% | 13.2% | 0.0% | 14.8% | 0.0% | 0.1% | 19.7% |
| 1994 | 1045 | 2,3,4,5 | 0.5% | 0.0% | 0.0% | 0.4% | 0.0% | 13.0% | 5.5% | 1.2% | 14.5% | 0.0% | 2.0% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 4.1% | 0.0% | 37.1% | 0.0% | 0.6% | 18.9% |
| 1995 | 831 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 7.1% | 3.2% | 0.0% | 6.6% | 0.0% | 1.6% | 0.0% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.3% | 0.0% | 23.9% | 0.0% | 1.9% | 32.0% |
| 1996 | 1363 | 2,3,4,5 | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 1.0% | 0.7% | 0.0% | 14.6% | 0.0% | 0.4% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.1% | 14.3% | 0.0% | 32.4% | 0.2% | 11.8% | 22.9% |
| 1997 | 1402 | 2,3,4,5 | 0.7% | 0.1% | 0.0% | 0.2% | 0.0% | 2.6% | 1.7% | 0.0% | 9.4% | 0.6% | 1.1% | 0.1% | 0.9% | 0.1% | 0.0% | 0.0% | 0.0% | 11.5% | 0.0% | 33.7% | 0.0% | 0.3% | 36.8% |
| 1998 | 738 | 2,3,4,5 | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 3.3% | 0.0% | 11.9% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.1% | 0.0% | 0.0% | 4.7% | 0.0% | 42.5% | 0.0% | 0.8% | 30.9% |
| 1999 | 280 | 2,3,4,5 | 3.9% | 0.0% | 0.0% | 1.8% | 0.0% | 1.4% | 10.0% | 0.0% | 14.6% | 0.0% | 0.0% | 3.2% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 5.7% | 0.0% | 35.7% | 0.0% | 0.0% | 22.1% |
| 2000 | 378 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.1% | 9.3% | 0.0% | 15.9% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 6.1% | 0.0% | 35.4% | 0.0% | 0.0% | 23.0% |
| 2001 | 1749 | 2,3,4,5 | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 4.9% | 5.3% | 0.0% | 9.3% | 0.0% | 0.5% | 0.0% | 2.3% | 0.1% | 0.2% | 0.0% | 0.0% | 7.9% | 0.0% | 37.6% | 0.0% | 0.8% | 30.9% |
| 2002 | 1623 | 2,3,4,5 | 0.9% | 0.0% | 0.0% | 0.7% | 0.0% | 8.3% | 7.2% | 0.0% | 7.8% | 0.0% | 0.0% | 0.0% | 2.6% | 0.6% | 0.3% | 0.0% | 0.0% | 6.1% | 0.0% | 35.7% | 0.0% | 0.1% | 29.7% |
| 2003 | 767 | 2,3,4,5 | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 13.2% | 3.1% | 0.0% | 6.3% | 0.0% | 0.3% | 0.0% | 6.8% | 0.5% | 0.0% | 0.0% | 0.0% | 3.1% | 0.0% | 37.7% | 0.0% | 0.0% | 28.3% |
| 2004 | 565 | 2,3,4,5 | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 7.6% | 6.5% | 0.0% | 6.2% | 0.0% | 0.0% | 0.0% | 11.0% | 0.4% | 0.5% | 0.0% | 0.0% | 8.7% | 0.0% | 29.7% | 0.0% | 0.7% | 28.3% |
| 2005 | 774 | 2,3,4,5 | 0.3% | 0.1% | 0.0% | 0.3% | 0.0% | 10.5% | 7.6% | 0.0% | 18.3% | 0.0% | 0.0% | 0.0% | 7.1% | 0.6% | 0.3% | 0.0% | 0.0% | 6.6% | 0.0% | 30.7% | 0.0% | 0.0% | 17.6% |
| 2006 | 1612 | 2,3,4,5 | 0.4% | 0.1% | 0.0% | 0.1% | 0.0% | 7.9% | 5.5% | 0.0% | 6.5% | 0.0% | 0.0% | 0.0% | 6.7% | 1.2% | 0.1% | 0.0% | 0.0% | 7.4% | 0.0% | 50.4% | 0.0% | 0.3% | 13.4% |
| 2007 | 2132 | 2,3,4,5 | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 9.1% | 4.6% | 0.0% | 8.1% | 0.0% | 0.0% | 0.0% | 2.8% | 0.2% | 0.0% | 0.1% | 0.0% | 6.5% | 0.0% | 31.0% | 0.2% | 17.5% | 19.4% |
| 2008 | 1795 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 6.0% | 5.0% | 0.0% | 6.6% | 0.0% | 0.0% | 0.0% | 4.4% | 0.3% | 0.0% | 0.0% | 0.0% | 11.2% | 0.0% | 42.1% | 0.0% | 0.1% | 24.1% |
| 2009 | 1747 | 2,3,4,5 | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 3.1% | 5.4% | 0.0% | 5.3% | 0.0% | 0.0% | 0.0% | 3.3% | 0.3% | 0.0% | 0.0% | 0.0% | 13.5% | 0.0% | 32.9% | 0.0% | 0.0% | 36.1% |
| 2010 | 1835 | 2,3,4,5 | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 7.0% | 6.6% | 0.0% | 6.2% | 0.0% | 0.0% | 0.0% | 10.1% | 0.7% | 0.3% | 0.0% | 0.0% | 9.3% | 0.0% | 31.5% | 0.0% | 0.5% | 27.7% |
| 2011 | 1433 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 4.6% | 4.8% | 0.0% | 12.4% | 0.0% | 0.0% | 0.0% | 2.9% | 0.3% | 0.0% | 0.0% | 0.0% | 8.2% | 0.0% | 37.3% | 0.0% | 0.3% | 29.2% |
| 2012 | 1929 | 2,3,4,5 | 0.0% | 0.2% | 0.1% | 0.5% | 0.0% | 2.0% | 4.8% | 0.0% | 6.6% | 0.0% | 0.4% | 0.2% | 6.3% | 0.9% | 0.3% | 0.0% | 0.0% | 6.2% | 0.0% | 53.9% | 0.0% | 0.2% | 17.6% |
| 2013 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 1317 |  | 0.5% | 0.0% | 0.0% | 0.2% | 0.0% | 7.9% | 4.8% | 0.6% | 11.1% | 0.0% | 0.8% | 0.2% | 4.8% | 0.3% | 0.1% | 0.0% | 0.0% | 9.4% | 0.0% | 33.4% | 0.0% | 1.6% | 24.2% |
| 1979-1984 | 0 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 1357 |  | 0.1% | 0.0% | 0.0% | 0.2% | 0.0% | 12.6% | 3.5% | 2.0% | 14.3% | 0.1% | 2.2% | 0.0% | 6.2% | 0.2% | 0.2% | 0.0% | 0.0% | 12.6% | 0.0% | 24.5% | 0.1% | 0.6% | 20.6% |
| 1996-1998 | 1168 |  | 1.4% | 0.1% | 0.0% | 0.1% | 0.0% | 1.7% | 1.9% | 0.0% | 12.0% | 0.2% | 0.5% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.2% | 0.0% | 36.2% | 0.1% | 4.3% | 30.2% |
| 1999-2013 | 1330 |  | 0.5% | 0.0% | 0.0% | 0.2% | 0.0% | 6.8% | 6.1% | 0.0% | 9.3% | 0.0% | 0.1% | 0.2% | 4.9% | 0.4% | 0.1% | 0.0% | 0.0% | 7.6% | 0.0% | 37.3% | 0.0% | 1.5% | 24.8% |

*Appendix C31. Percent distribution of Lower Shuswap River Summer (Fraser Early) total fishing mortalities among fisheries and escapement.*

| | | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Catch Year | Estimated # of CWTs | Ages Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | 121 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 638 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 2063 | 2,3,4 | 7.8% | 0.2% | 0.1% | 9.7% | 0.3% | 5.1% | 0.0% | 0.0% | 3.0% | 1.6% | 3.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 1.5% | 0.2% | 0.0% | 4.8% | 1.5% | 0.2% | 60.8% |
| 1989 | 1664 | 2,3,4,5 | 5.2% | 4.0% | 0.0% | 7.3% | 0.0% | 1.1% | 0.0% | 0.0% | 0.4% | 0.5% | 7.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 0.1% | 0.0% | 4.7% | 0.4% | 0.0% | 66.7% |
| 1990 | 1248 | 2,3,4,5 | 27.8% | 0.0% | 0.8% | 19.5% | 0.3% | 3.8% | 3.0% | 0.0% | 1.8% | 1.8% | 3.2% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 7.2% | 1.5% | 1.1% | 26.8% |
| 1991 | 629 | 2,3,4,5 | 33.9% | 0.0% | 0.6% | 22.1% | 0.5% | 3.0% | 0.0% | 0.0% | 1.4% | 1.3% | 6.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.7% | 0.0% | 0.0% | 4.8% | 0.0% | 0.8% | 21.3% |
| 1992 | 285 | 2,3,4,5 | 12.6% | 0.0% | 0.0% | 17.2% | 0.0% | 3.9% | 0.0% | 0.0% | 5.6% | 6.0% | 6.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 0.0% | 4.6% | 4.6% | 0.0% | 36.5% |
| 1993 | 457 | 2,3,4,5 | 6.3% | 2.0% | 0.0% | 12.5% | 0.0% | 9.6% | 0.0% | 0.0% | 1.5% | 1.1% | 8.5% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.1% | 3.7% | 3.7% | 42.5% |
| 1994 | 1053 | 2,3,4,5 | 9.3% | 0.0% | 1.0% | 17.3% | 1.7% | 8.1% | 0.0% | 0.9% | 1.9% | 10.0% | 5.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.1% | 0.0% | 0.0% | 9.2% | 0.0% | 0.5% | 31.0% |
| 1995 | 533 | 2,3,4,5 | 15.9% | 0.0% | 3.8% | 11.3% | 4.1% | 3.4% | 0.0% | 0.0% | 2.8% | 0.8% | 3.6% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 3.9% | 0.0% | 0.0% | 7.3% | 0.4% | 0.6% | 40.7% |
| 1996 | 744 | 2,3,4,5 | 16.4% | 0.0% | 0.0% | 0.5% | 0.7% | 0.4% | 0.9% | 0.0% | 4.4% | 0.0% | 0.5% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.8% | 1.3% | 0.0% | 65.5% |
| 1997 | 612 | 2,3,4,5 | 13.2% | 0.0% | 0.0% | 8.7% | 2.1% | 0.5% | 0.0% | 0.0% | 6.0% | 0.2% | 3.8% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 2.9% | 0.0% | 0.0% | 15.2% | 0.0% | 0.5% | 46.2% |
| 1998 | 760 | 2,3,4,5 | 21.6% | 0.4% | 9.2% | 7.0% | 13.9% | 0.0% | 0.7% | 0.0% | 7.1% | 0.0% | 0.4% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 5.7% | 0.7% | 1.2% | 30.3% |
| 1999 | 832 | 2,3,4,5 | 15.6% | 0.0% | 6.5% | 0.7% | 4.6% | 0.0% | 0.0% | 0.0% | 4.7% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.7% | 0.4% | 0.0% | 62.6% |
| 2000 | 728 | 2,3,4,5 | 10.9% | 0.0% | 9.9% | 0.0% | 4.7% | 0.0% | 0.0% | 0.0% | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 7.3% | 1.4% | 1.0% | 60.6% |
| 2001 | 1159 | 2,3,4,5 | 8.3% | 1.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 9.4% | 0.3% | 0.7% | 1.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 1.3% | 1.6% | 0.3% | 75.2% |
| 2002 | 1536 | 2,3,4,5 | 18.6% | 0.0% | 3.5% | 13.0% | 4.2% | 1.3% | 0.0% | 0.0% | 3.8% | 0.1% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.5% | 0.5% | 0.0% | 44.8% |
| 2003 | 1881 | 2,3,4,5 | 9.8% | 0.9% | 2.0% | 7.8% | 2.4% | 0.0% | 0.3% | 0.0% | 7.3% | 1.3% | 0.0% | 0.4% | 0.2% | 0.0% | 0.1% | 0.0% | 0.5% | 0.0% | 0.0% | 4.0% | 2.3% | 0.0% | 60.6% |
| 2004 | 1161 | 2,3,4,5 | 18.3% | 0.0% | 1.9% | 9.3% | 4.0% | 0.8% | 0.0% | 0.0% | 5.5% | 0.0% | 0.0% | 4.6% | 0.3% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 11.8% | 2.8% | 0.0% | 39.5% |
| 2005 | 823 | 2,3,4,5 | 15.3% | 0.0% | 0.9% | 12.4% | 5.3% | 0.4% | 3.2% | 0.0% | 14.3% | 0.0% | 0.0% | 1.3% | 0.2% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 7.2% | 3.5% | 0.1% | 35.5% |
| 2006 | 1315 | 2,3,4,5 | 12.1% | 0.0% | 2.1% | 13.3% | 8.2% | 0.3% | 0.9% | 0.0% | 10.1% | 0.0% | 0.0% | 1.7% | 0.2% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 6.9% | 3.0% | 0.9% | 39.4% |
| 2007 | 494 | 2,3,4,5 | 7.9% | 0.2% | 8.1% | 3.4% | 10.3% | 0.0% | 1.0% | 0.0% | 4.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.0% | 5.5% | 0.0% | 55.3% |
| 2008 | 1762 | 2,3,4,5 | 9.1% | 0.0% | 0.5% | 8.0% | 7.7% | 0.0% | 1.6% | 0.0% | 7.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 3.1% | 0.0% | 60.4% |
| 2009 | 1707 | 2,3,4,5 | 9.3% | 0.0% | 1.3% | 6.4% | 3.3% | 0.8% | 2.3% | 0.0% | 9.3% | 0.0% | 0.0% | 0.6% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 10.2% | 4.4% | 1.9% | 49.9% |
| 2010 | 2038 | 2,3,4,5 | 10.0% | 0.0% | 1.5% | 10.4% | 3.1% | 0.0% | 0.5% | 0.0% | 9.9% | 0.0% | 0.0% | 0.3% | 0.2% | 0.1% | 0.1% | 0.0% | 1.7% | 0.0% | 0.0% | 9.0% | 1.6% | 1.5% | 50.1% |
| 2011 | 1904 | 2,3,4,5 | 8.2% | 0.1% | 1.8% | 7.4% | 4.5% | 1.3% | 0.8% | 0.0% | 8.2% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.4% | 0.5% | 0.0% | 12.0% | 2.8% | 0.1% | 51.6% |
| 2012 | 2037 | 2,3,4,5 | 6.5% | 0.0% | 3.2% | 7.1% | 4.5% | 1.0% | 1.7% | 0.0% | 10.7% | 0.0% | 0.0% | 0.7% | 0.2% | 0.3% | 0.2% | 0.0% | 0.2% | 3.0% | 0.0% | 5.4% | 4.8% | 0.0% | 50.3% |
| 2013 | 8441 | 2,3,4,5 | 7.2% | 0.2% | 0.4% | 7.2% | 1.8% | 0.2% | 0.9% | 0.0% | 10.0% | 0.0% | 0.0% | 0.3% | 0.9% | 0.0% | 0.0% | 0.0% | 0.4% | 0.3% | 0.0% | 8.1% | 1.7% | 1.1% | 59.0% |
| 1979-2013 | 1456 | | 13.0% | 0.4% | 2.3% | 9.2% | 3.6% | 1.7% | 0.7% | 0.0% | 6.0% | 1.0% | 1.9% | 0.7% | 0.1% | 0.0% | 0.0% | 0.0% | 1.0% | 0.3% | 0.0% | 7.0% | 2.0% | 0.6% | 48.6% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 992 | | 14.9% | 0.8% | 0.8% | 14.6% | 0.9% | 4.7% | 0.4% | 0.1% | 2.3% | 2.9% | 5.5% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 1.8% | 0.5% | 0.0% | 6.3% | 1.5% | 0.9% | 40.8% |
| 1996-1998 | 705 | | 17.1% | 0.1% | 3.1% | 5.4% | 5.6% | 0.3% | 0.5% | 0.0% | 5.9% | 0.1% | 1.6% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 9.5% | 0.7% | 0.6% | 47.3% |
| 1999-2013 | 1855 | | 11.1% | 0.2% | 2.9% | 7.1% | 4.6% | 0.4% | 0.9% | 0.0% | 7.9% | 0.1% | 0.0% | 0.9% | 0.2% | 0.1% | 0.0% | 0.0% | 0.4% | 0.3% | 0.0% | 6.9% | 2.6% | 0.5% | 53.0% |

*Appendix C32. Percent distribution of Skagit Spring Fingerling total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 33 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 69 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 38 | 4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | 4 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | 80 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | 548 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | 928 | 2,3,4 | 1.5% | 0.0% | 0.0% | 0.2% | 0.0% | 2.2% | 4.5% | 0.0% | 11.4% | 0.3% | 2.8% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.7% | 0.0% | 1.4% | 0.0% | 0.2% | 65.3% |
| 1998 | 679 | 2,3,4,5 | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.7% | 0.0% | 19.3% | 0.0% | 0.9% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.8% | 0.0% | 1.8% | 0.0% | 0.3% | 62.2% |
| 1999 | 1805 | 2,3,4,5 | 0.9% | 0.2% | 0.0% | 0.3% | 0.3% | 2.3% | 6.5% | 0.0% | 6.9% | 0.0% | 0.1% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 0.0% | 1.5% | 0.0% | 0.1% | 77.7% |
| 2000 | 1223 | 2,3,4,5 | 2.0% | 0.0% | 0.6% | 0.0% | 0.0% | 6.5% | 7.4% | 0.0% | 13.0% | 0.0% | 0.2% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.1% | 0.0% | 0.2% | 0.0% | 0.1% | 64.5% |
| 2001 | 1918 | 2,3,4,5 | 1.8% | 0.1% | 0.4% | 0.3% | 0.0% | 5.9% | 4.2% | 0.0% | 7.1% | 0.0% | 0.0% | 0.6% | 0.2% | 0.0% | 0.0% | 0.0% | 0.1% | 10.1% | 0.0% | 0.6% | 0.0% | 0.1% | 68.8% |
| 2002 | 1799 | 2,3,4,5 | 2.8% | 0.0% | 0.6% | 0.6% | 0.0% | 5.5% | 5.1% | 0.0% | 8.4% | 0.0% | 0.1% | 0.6% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 3.7% | 0.0% | 0.6% | 0.0% | 0.2% | 71.5% |
| 2003 | 693 | 2,3,4,5 | 2.6% | 0.0% | 1.0% | 1.3% | 0.0% | 18.8% | 0.9% | 0.0% | 7.5% | 0.0% | 0.3% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 0.9% | 0.0% | 0.9% | 62.8% |
| 2004 | 1136 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 12.4% | 3.1% | 0.0% | 10.2% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 0.3% | 0.0% | 0.0% | 3.0% | 0.0% | 1.3% | 0.0% | 0.4% | 66.4% |
| 2005 | 1168 | 2,3,4,5 | 1.8% | 0.2% | 0.0% | 0.0% | 0.0% | 12.8% | 6.8% | 0.0% | 8.5% | 0.0% | 0.3% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.3% | 4.6% | 0.2% | 61.8% |
| 2006 | 1662 | 2,3,4,5 | 0.4% | 0.1% | 0.0% | 0.2% | 0.0% | 7.2% | 3.5% | 0.0% | 9.4% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 4.1% | 0.0% | 1.6% | 23.6% | 0.6% | 49.1% |
| 2007 | 2429 | 2,3,4,5 | 0.4% | 0.2% | 0.0% | 0.0% | 0.0% | 9.7% | 7.3% | 0.0% | 8.3% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 4.1% | 0.0% | 1.7% | 23.3% | 0.3% | 43.7% |
| 2008 | 1449 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 3.9% | 7.0% | 0.0% | 6.1% | 0.0% | 0.3% | 0.3% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 8.8% | 0.0% | 14.4% | 17.3% | 0.1% | 40.8% |
| 2009 | 949 | 2,3,4,5 | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 5.9% | 0.0% | 5.7% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 7.8% | 0.0% | 17.8% | 14.1% | 0.4% | 43.7% |
| 2010 | 1505 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 4.3% | 0.0% | 6.9% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 2.7% | 0.0% | 20.3% | 8.4% | 0.2% | 54.6% |
| 2011 | 1328 | 2,3,4,5 | 0.4% | 0.1% | 0.0% | 0.0% | 0.0% | 1.4% | 5.0% | 0.0% | 4.4% | 0.0% | 0.0% | 0.2% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 5.0% | 0.0% | 19.4% | 9.3% | 0.5% | 54.1% |
| 2012 | 1581 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.2% | 4.6% | 0.0% | 10.0% | 0.0% | 0.0% | 0.5% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 7.5% | 0.0% | 18.8% | 8.9% | 0.3% | 46.0% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 1391 | | 1.1% | 0.0% | 0.2% | 0.2% | 0.0% | 6.1% | 5.1% | 0.0% | 9.0% | 0.0% | 0.3% | 0.3% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 5.2% | 0.0% | 6.4% | 6.8% | 0.3% | 58.3% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1996-1998 | 804 | | 1.9% | 0.0% | 0.0% | 0.1% | 0.0% | 1.1% | 5.1% | 0.0% | 15.4% | 0.2% | 1.8% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.2% | 0.0% | 1.6% | 0.0% | 0.3% | 63.7% |
| 1999-2013 | 1475 | | 1.0% | 0.1% | 0.2% | 0.2% | 0.0% | 6.8% | 5.1% | 0.0% | 8.0% | 0.0% | 0.1% | 0.3% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 4.8% | 0.0% | 7.1% | 7.8% | 0.3% | 57.5% |

*Appendix C33. Percent distribution of Skagit Spring Yearling total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | 8 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | 76 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | 132 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.8% | 0.0% | 0.0% | 29.5% | 0.0% | 25.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.2% | 0.0% | 9.1% | 0.0% | 0.0% | 10.6% |
| 1986 | 230 | 2,3,4,5 | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 6.5% | 5.2% | 6.1% | 36.1% | 3.9% | 9.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.6% | 0.0% | 3.0% | 0.0% | 0.0% | 18.7% |
| 1987 | 165 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 4.8% | 0.0% | 3.0% | 0.0% | 0.0% | 9.1% | 0.0% | 4.8% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 40.6% | 0.0% | 21.2% | 0.0% | 0.0% | 15.2% |
| 1988 | 586 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 9.2% | 0.5% | 17.9% | 0.0% | 12.5% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.0% | 0.0% | 19.3% | 0.0% | 0.0% | 20.1% |
| 1989 | 868 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.9% | 1.8% | 0.0% | 21.2% | 0.8% | 3.3% | 0.0% | 4.6% | 0.0% | 0.0% | 0.0% | 0.0% | 10.1% | 0.0% | 28.0% | 0.0% | 0.1% | 26.0% |
| 1990 | 740 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 8.5% | 3.2% | 12.7% | 0.4% | 4.1% | 0.5% | 3.6% | 0.0% | 0.0% | 0.0% | 0.0% | 24.3% | 0.0% | 16.2% | 0.0% | 0.0% | 21.4% |
| 1991 | 502 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | 103 | 2,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | 417 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | 755 | 4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | 182 | 2,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | 186 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | 645 | 2,3,4 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 3.1% | 8.8% | 0.0% | 22.6% | 0.0% | 3.9% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 29.9% | 0.0% | 1.4% | 0.0% | 0.0% | 29.5% |
| 1998 | 1233 | 2,3,4,5 | 0.6% | 0.2% | 0.0% | 0.0% | 0.0% | 1.1% | 9.9% | 0.0% | 10.9% | 0.0% | 0.3% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.9% | 0.0% | 3.0% | 0.0% | 0.2% | 51.0% |
| 1999 | 2538 | 2,3,4,5 | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 5.6% | 4.4% | 0.0% | 8.2% | 0.0% | 0.0% | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 12.0% | 0.0% | 1.2% | 0.0% | 0.2% | 67.6% |
| 2000 | 574 | 2,3,4,5 | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 6.4% | 3.1% | 0.0% | 16.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.0% | 0.0% | 1.4% | 0.0% | 0.0% | 51.4% |
| 2001 | 354 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 2.3% | 0.0% | 19.8% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 0.0% | 0.0% | 0.0% | 24.6% | 0.0% | 1.4% | 0.0% | 0.0% | 46.9% |
| 2002 | 312 | 2,3,4,5 | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 14.7% | 0.0% | 17.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 13.1% | 0.0% | 1.0% | 0.0% | 0.0% | 51.3% |
| 2003 | 963 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 19.3% | 4.6% | 0.0% | 11.2% | 0.0% | 0.0% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 10.4% | 0.0% | 0.7% | 0.0% | 0.0% | 52.4% |
| 2004 | 1656 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 13.0% | 4.1% | 0.0% | 7.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 5.6% | 0.0% | 1.0% | 0.1% | 0.1% | 68.1% |
| 2005 | 1258 | 2,3,4,5 | 1.0% | 0.0% | 0.0% | 0.2% | 0.0% | 8.1% | 5.6% | 0.0% | 11.8% | 0.0% | 0.3% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% | 8.7% | 0.0% | 1.0% | 7.0% | 0.2% | 55.8% |
| 2006 | 820 | 2,3,4,5 | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 8.2% | 6.2% | 0.0% | 13.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.4% | 0.0% | 4.8% | 0.0% | 1.5% | 33.8% | 0.0% | 31.3% |
| 2007 | 843 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 8.2% | 0.0% | 4.7% | 0.0% | 0.0% | 0.0% | 0.5% | 0.2% | 0.0% | 0.0% | 0.0% | 17.6% | 0.0% | 1.3% | 24.6% | 1.1% | 39.5% |
| 2008 | 770 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 3.8% | 0.0% | 6.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.5% | 0.0% | 11.9% | 21.7% | 0.1% | 41.9% |
| 2009 | 402 | 2,3,4,5 | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 13.2% | 0.0% | 4.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 9.5% | 0.0% | 14.4% | 16.2% | 0.2% | 38.6% |
| 2010 | 432 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 3.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.9% | 0.0% | 17.8% | 20.4% | 0.5% | 44.7% |
| 2011 | 614 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 4.2% | 0.0% | 8.1% | 0.0% | 0.0% | 0.5% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 13.4% | 0.0% | 11.4% | 21.0% | 0.2% | 38.9% |
| 2012 | 851 | 3,4,5 | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 5.2% | 0.0% | 6.0% | 0.0% | 1.3% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 13.6% | 0.0% | 14.8% | 16.2% | 0.0% | 40.3% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 772 | | 0.4% | 0.0% | 0.0% | 0.3% | 0.1% | 4.7% | 5.7% | 0.4% | 13.5% | 0.2% | 3.0% | 0.2% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 15.7% | 0.0% | 8.3% | 7.3% | 0.1% | 39.1% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 454 | | 0.3% | 0.0% | 0.0% | 0.8% | 0.0% | 4.6% | 4.1% | 1.6% | 21.1% | 0.9% | 9.9% | 0.1% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 19.8% | 0.0% | 16.1% | 0.0% | 0.0% | 18.7% |
| 1996-1998 | 939 | | 0.4% | 0.1% | 0.0% | 0.0% | 0.0% | 2.1% | 9.4% | 0.0% | 16.8% | 0.0% | 2.1% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 25.4% | 0.0% | 2.2% | 0.0% | 0.1% | 40.2% |
| 1999-2013 | 885 | | 0.4% | 0.0% | 0.0% | 0.1% | 0.1% | 5.2% | 5.9% | 0.0% | 9.8% | 0.0% | 0.1% | 0.1% | 0.5% | 0.1% | 0.0% | 0.0% | 0.0% | 12.6% | 0.0% | 5.8% | 11.5% | 0.2% | 47.8% |

*Appendix C34. Percent distribution of Skykomish Fall Fingerling (Snohomish Wild) total fishing mortalities among fisheries and escapement.*

| Catch | Estimated | Ages | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # of | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1998 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1999 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2000 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2001 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2002 | 21 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | 131 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2004 | 610 | 2,3,4 | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 16.4% | 3.8% | 0.0% | 8.7% | 0.0% | 0.0% | 1.5% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 8.0% | 0.0% | 0.5% | 0.0% | 0.0% | 60.2% |
| 2005 | 547 | 2,3,4,5 | 0.7% | 0.0% | 0.0% | 0.4% | 0.0% | 18.5% | 8.8% | 0.0% | 6.4% | 0.0% | 0.7% | 0.0% | 3.1% | 0.5% | 0.0% | 0.0% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 57.2% |
| 2006 | 652 | 2,3,4,5 | 1.1% | 0.0% | 0.0% | 0.3% | 0.0% | 14.1% | 4.1% | 0.0% | 9.0% | 0.0% | 0.2% | 0.0% | 5.1% | 0.0% | 0.0% | 0.0% | 0.0% | 8.6% | 0.0% | 0.9% | 0.0% | 0.3% | 56.3% |
| 2007 | 1150 | 2,3,4,5 | 0.4% | 0.0% | 0.0% | 0.2% | 0.0% | 15.0% | 6.6% | 0.0% | 5.9% | 0.0% | 0.0% | 0.0% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 7.5% | 0.0% | 1.6% | 0.0% | 0.0% | 59.7% |
| 2008 | 787 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 8.5% | 2.9% | 0.0% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.0% | 0.0% | 1.3% | 0.0% | 3.8% | 72.2% |
| 2009 | 353 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 4.8% | 0.0% | 4.5% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 16.4% | 0.0% | 0.0% | 0.0% | 0.0% | 70.8% |
| 2010 | 420 | 2,3,4,5 | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 2.6% | 2.4% | 0.0% | 3.6% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 9.3% | 0.0% | 1.7% | 3.6% | 0.0% | 76.0% |
| 2011 | 508 | 2,3,4,5 | 0.2% | 0.6% | 0.0% | 0.0% | 0.0% | 1.8% | 3.5% | 0.0% | 7.3% | 0.0% | 0.0% | 0.0% | 1.6% | 0.6% | 0.0% | 0.0% | 0.0% | 19.1% | 0.0% | 0.8% | 9.8% | 0.2% | 54.5% |
| 2012 | 1036 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.0% | 0.2% | 4.0% | 3.5% | 0.0% | 15.7% | 0.0% | 0.0% | 0.1% | 2.9% | 0.0% | 0.0% | 0.0% | 0.0% | 10.9% | 0.0% | 1.1% | 1.4% | 0.6% | 59.4% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 674 | | 0.4% | 0.1% | 0.0% | 0.1% | 0.0% | 9.2% | 4.5% | 0.0% | 7.1% | 0.0% | 0.1% | 0.2% | 2.0% | 0.1% | 0.0% | 0.0% | 0.0% | 10.2% | 0.0% | 0.9% | 1.7% | 0.5% | 62.9% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1996-1998 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1999-2013 | 674 | | 0.4% | 0.1% | 0.0% | 0.1% | 0.0% | 9.2% | 4.5% | 0.0% | 7.1% | 0.0% | 0.1% | 0.2% | 2.0% | 0.1% | 0.0% | 0.0% | 0.0% | 10.2% | 0.0% | 0.9% | 1.7% | 0.5% | 62.9% |

*Appendix C35. Percent distribution of Sooes (now Tsoo-Yess) Fall Fingerling (Washington Coastal Wild) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 18 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 33 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 225 | 2,3,4 | 8.0% | 19.1% | 0.4% | 2.7% | 0.0% | 4.0% | 6.2% | 0.0% | 0.4% | 0.0% | 4.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 52.9% |
| 1990 | 170 | 3,4,5 | 11.8% | 5.3% | 4.1% | 16.5% | 0.0% | 17.6% | 0.0% | 0.0% | 7.1% | 1.8% | 2.4% | 0.0% | 1.8% | 2.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 28.8% |
| 1991 | 377 | 2,4,5,6 | 14.1% | 0.0% | 0.3% | 10.6% | 0.0% | 7.2% | 0.0% | 0.0% | 0.3% | 0.3% | 3.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 0.0% | 0.0% | 0.0% | 0.0% | 58.9% |
| 1992 | 326 | 2,3,5,6 | 10.4% | 0.3% | 0.3% | 10.7% | 0.0% | 20.6% | 1.5% | 0.0% | 1.2% | 2.1% | 3.1% | 0.0% | 0.3% | 0.0% | 0.0% | 0.6% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 46.9% |
| 1993 | 251 | 2,3,4,6 | 6.4% | 0.4% | 0.0% | 8.0% | 2.0% | 17.1% | 0.0% | 0.0% | 0.0% | 2.0% | 2.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 60.6% |
| 1994 | 240 | 2,3,4,5 | 17.9% | 13.8% | 3.3% | 9.2% | 0.8% | 7.1% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 46.3% |
| 1995 | 177 | 2,3,4,5,6 | 13.6% | 0.0% | 0.0% | 6.2% | 0.0% | 13.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 63.8% |
| 1996 | 224 | 2,3,4,5,6 | 15.2% | 0.0% | 0.0% | 0.4% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 83.0% |
| 1997 | 305 | 2,3,4,5,6 | 11.8% | 0.0% | 6.2% | 5.2% | 0.0% | 0.0% | 2.6% | 0.0% | 1.6% | 0.7% | 0.7% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 3.6% | 0.0% | 0.0% | 0.0% | 0.0% | 19.7% | 46.9% |
| 1998 | 282 | 2,3,4,5,6 | 9.6% | 0.0% | 1.4% | 20.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 68.4% |
| 1999 | 220 | 2,3,4,5,6 | 14.1% | 0.0% | 13.6% | 7.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 63.6% |
| 2000 | 88 | 2,3,4,5,6 | 0.0% | 0.0% | 5.7% | 0.0% | 0.0% | 0.0% | 11.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 83.0% |
| 2001 | 313 | 2,3,4,5,6 | 9.3% | 0.0% | 2.9% | 0.0% | 0.0% | 0.0% | 2.6% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 83.4% |
| 2002 | 563 | 2,3,4,5,6 | 13.0% | 0.2% | 1.8% | 3.4% | 2.1% | 0.7% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 1.2% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 75.8% |
| 2003 | 786 | 2,3,4,5,6 | 14.0% | 0.1% | 0.0% | 5.5% | 2.7% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 24.2% | 50.8% |
| 2004 | 921 | 2,3,4,5,6 | 18.7% | 0.8% | 2.2% | 15.9% | 0.0% | 0.8% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.9% | 58.3% |
| 2005 | 499 | 2,3,4,5,6 | 25.1% | 0.0% | 2.4% | 25.3% | 8.4% | 1.0% | 0.0% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.8% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 33.3% |
| 2006 | 240 | 2,3,4,5,6 | 23.8% | 4.2% | 2.5% | 25.0% | 2.1% | 1.7% | 2.9% | 0.0% | 5.0% | 0.0% | 0.0% | 0.0% | 0.4% | 1.3% | 0.0% | 0.0% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 29.2% |
| 2007 | 90 | 2,3,4,5,6 | 10.0% | 0.0% | 0.0% | 15.6% | 14.4% | 0.0% | 0.0% | 0.0% | 15.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 44.4% |
| 2008 | 115 | 2,3,4,5,6 | 8.7% | 0.0% | 0.0% | 14.8% | 11.3% | 0.0% | 9.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 53.0% |
| 2009 | 563 | 2,3,4,5,6 | 11.5% | 1.2% | 1.1% | 8.0% | 2.3% | 0.0% | 4.6% | 0.0% | 2.8% | 0.0% | 0.0% | 1.4% | 2.3% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 63.8% |
| 2010 | 442 | 2,3,4,5,6 | 4.3% | 0.0% | 2.3% | 5.7% | 1.4% | 0.9% | 1.1% | 0.0% | 4.3% | 0.0% | 0.0% | 0.0% | 0.2% | 3.2% | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 0.2% | 0.0% | 0.0% | 74.7% |
| 2011 | 1117 | 2,3,4,5,6 | 9.8% | 0.4% | 0.9% | 4.4% | 1.3% | 1.7% | 2.0% | 0.0% | 2.1% | 0.0% | 0.0% | 1.2% | 0.4% | 1.8% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 73.4% |
| 2012 | 529 | 3,4,5,6 | 13.0% | 0.0% | 1.3% | 10.2% | 4.5% | 1.1% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 0.8% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 64.3% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 378 | | 12.2% | 1.9% | 2.2% | 9.6% | 2.2% | 4.0% | 2.0% | 0.0% | 1.9% | 0.3% | 0.7% | 0.2% | 0.5% | 0.6% | 0.1% | 0.0% | 0.2% | 0.6% | 0.0% | 0.0% | 0.0% | 2.0% | 58.6% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 252 | | 11.7% | 5.6% | 1.2% | 9.1% | 0.4% | 12.4% | 1.1% | 0.0% | 1.3% | 1.0% | 2.4% | 0.0% | 0.4% | 0.4% | 0.0% | 0.1% | 0.1% | 1.3% | 0.0% | 0.0% | 0.0% | 0.3% | 51.2% |
| 1996-1998 | 270 | | 12.2% | 0.0% | 2.5% | 8.8% | 0.0% | 0.1% | 0.9% | 0.0% | 0.5% | 0.2% | 0.4% | 0.0% | 0.0% | 0.0% | 0.3% | 0.1% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 6.6% | 66.1% |
| 1999-2013 | 463 | | 12.5% | 0.5% | 2.6% | 10.1% | 3.6% | 0.6% | 2.6% | 0.0% | 2.6% | 0.0% | 0.0% | 0.3% | 0.7% | 0.8% | 0.0% | 0.0% | 0.1% | 0.4% | 0.0% | 0.0% | 0.0% | 1.9% | 60.8% |

*Appendix C36. Percent distribution of Spring Creek Tule (Spring Creek Hatchery) total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 5297 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 24.9% | 0.1% | 0.2% | 1.2% | 0.7% | 2.5% | 0.0% | 16.5% | 7.0% | 1.3% | 0.2% | 1.6% | 6.0% | 0.0% | 22.1% | 0.0% | 0.0% | 15.7% |
| 1980 | 6867 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 26.6% | 0.1% | 0.1% | 2.8% | 0.6% | 1.0% | 0.0% | 23.3% | 5.0% | 1.8% | 0.1% | 0.5% | 5.8% | 0.0% | 21.7% | 0.0% | 0.1% | 10.3% |
| 1981 | 7383 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 21.5% | 0.1% | 0.1% | 1.4% | 0.2% | 1.9% | 0.0% | 21.6% | 10.7% | 2.9% | 0.2% | 0.4% | 2.2% | 0.0% | 21.1% | 0.0% | 0.3% | 15.4% |
| 1982 | 4814 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 22.6% | 0.0% | 0.0% | 1.1% | 0.5% | 0.2% | 0.0% | 19.8% | 6.4% | 2.3% | 0.7% | 0.5% | 1.0% | 0.0% | 33.4% | 0.0% | 0.2% | 11.2% |
| 1983 | 897 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 30.8% | 0.4% | 0.0% | 1.2% | 0.3% | 0.0% | 0.0% | 9.1% | 3.9% | 0.0% | 0.2% | 0.3% | 7.9% | 0.0% | 19.7% | 0.0% | 0.2% | 25.8% |
| 1984 | 1175 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 26.3% | 0.3% | 0.0% | 0.0% | 2.3% | 1.1% | 0.0% | 3.1% | 0.3% | 2.6% | 0.6% | 0.8% | 8.9% | 0.0% | 26.3% | 2.6% | 0.1% | 24.6% |
| 1985 | 1260 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.6% | 0.6% | 0.0% | 0.0% | 0.2% | 0.2% | 0.0% | 11.8% | 2.4% | 4.4% | 0.1% | 0.0% | 1.3% | 0.0% | 27.5% | 0.2% | 0.1% | 36.6% |
| 1986 | 350 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 24.0% | 2.3% | 0.0% | 2.3% | 2.9% | 1.7% | 0.0% | 0.9% | 2.3% | 1.4% | 0.0% | 0.0% | 4.6% | 0.0% | 35.1% | 1.1% | 7.4% | 14.0% |
| 1987 | 158 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.3% | 7.0% | 1.9% | 1.3% | 15.8% | 5.1% | 0.0% | 25.9% | 6.3% | 2.5% | 11.4% |
| 1988 | 891 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 24.2% | 2.0% | 0.0% | 2.0% | 0.3% | 1.7% | 0.0% | 11.3% | 1.6% | 4.7% | 1.2% | 1.8% | 4.8% | 0.0% | 29.2% | 3.9% | 2.8% | 7.9% |
| 1989 | 2428 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 16.1% | 3.1% | 0.0% | 0.5% | 0.0% | 0.4% | 0.0% | 18.5% | 2.1% | 7.7% | 1.0% | 0.2% | 1.9% | 0.0% | 32.9% | 3.2% | 0.0% | 12.2% |
| 1990 | 2533 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 19.3% | 4.4% | 0.3% | 0.6% | 0.4% | 0.9% | 0.0% | 11.4% | 6.9% | 3.6% | 0.0% | 0.4% | 5.4% | 0.0% | 23.3% | 2.1% | 0.0% | 20.9% |
| 1991 | 3018 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.9% | 1.4% | 0.0% | 0.3% | 0.3% | 0.5% | 0.0% | 12.4% | 3.0% | 5.9% | 1.6% | 0.6% | 3.2% | 0.0% | 32.3% | 3.3% | 0.4% | 19.8% |
| 1992 | 3197 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.1% | 2.4% | 0.2% | 0.5% | 0.3% | 0.4% | 0.0% | 22.5% | 4.3% | 6.3% | 0.8% | 0.0% | 3.4% | 0.0% | 14.1% | 3.5% | 0.2% | 27.0% |
| 1993 | 1263 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 19.6% | 4.1% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 17.7% | 2.3% | 1.4% | 0.6% | 0.0% | 5.6% | 0.0% | 20.3% | 3.0% | 0.2% | 24.9% |
| 1994 | 990 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.2% | 3.8% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 2.1% | 0.0% | 1.2% | 0.0% | 0.0% | 1.0% | 0.0% | 31.6% | 0.0% | 0.0% | 38.1% |
| 1995 | 963 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.2% | 2.8% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 1.3% | 0.0% | 0.4% | 0.0% | 0.5% | 0.0% | 0.0% | 39.9% | 0.0% | 1.7% | 42.8% |
| 1996 | 933 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 4.8% | 1.1% | 0.0% | 1.0% | 0.0% | 57.1% | 1.8% | 0.6% | 28.4% |
| 1997 | 641 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.6% | 2.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 1.2% | 4.4% | 0.0% | 0.0% | 3.9% | 0.0% | 24.3% | 6.6% | 0.2% | 42.3% |
| 1998 | 861 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 1.6% | 2.2% | 0.2% | 0.0% | 1.3% | 0.0% | 21.8% | 14.1% | 1.4% | 55.1% |
| 1999 | 1652 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 3.9% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 8.2% | 1.7% | 11.2% | 1.0% | 0.0% | 0.4% | 0.0% | 36.4% | 6.5% | 1.3% | 28.8% |
| 2000 | 1016 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.0% | 5.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 1.8% | 3.9% | 0.1% | 0.0% | 1.8% | 0.0% | 26.0% | 7.7% | 0.0% | 48.0% |
| 2001 | 6766 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.7% | 0.9% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 4.5% | 2.2% | 11.8% | 0.8% | 0.0% | 1.2% | 0.0% | 24.0% | 2.2% | 0.1% | 48.3% |
| 2002 | 4700 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.4% | 1.4% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 14.3% | 6.9% | 4.4% | 1.3% | 0.1% | 0.5% | 0.0% | 25.4% | 2.5% | 0.0% | 32.5% |
| 2003 | 6404 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.3% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.4% | 3.4% | 3.8% | 0.4% | 0.0% | 0.2% | 0.0% | 23.3% | 2.3% | 0.5% | 44.4% |
| 2004 | 6401 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.1% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.3% | 2.4% | 3.1% | 0.9% | 0.0% | 0.4% | 0.0% | 19.0% | 1.8% | 0.1% | 49.8% |
| 2005 | 2471 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 24.6% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.0% | 0.9% | 1.1% | 0.1% | 0.0% | 0.0% | 0.0% | 27.8% | 0.9% | 0.2% | 35.2% |
| 2006 | 755 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.7% | 4.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.5% | 1.3% | 1.5% | 0.5% | 0.0% | 1.2% | 0.0% | 37.9% | 1.1% | 0.0% | 30.5% |
| 2007 | 1318 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 3.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 1.7% | 3.6% | 0.8% | 0.0% | 0.0% | 4.7% | 0.0% | 46.1% | 1.6% | 0.0% | 31.9% |
| 2008 | 2318 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 6.7% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 7.5% | 2.9% | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 41.9% | 2.6% | 0.0% | 31.1% |
| 2009 | 3066 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 2.3% | 0.0% | 0.5% | 0.0% | 0.0% | 0.3% | 1.4% | 3.6% | 0.0% | 0.0% | 0.0% | 6.4% | 0.0% | 43.3% | 2.5% | 0.2% | 38.5% |
| 2010 | 4362 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.5% | 3.1% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 11.5% | 5.0% | 4.0% | 0.3% | 0.0% | 0.9% | 0.0% | 37.3% | 1.4% | 0.2% | 31.1% |
| 2011 | 2443 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 5.9% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 5.5% | 6.0% | 2.0% | 0.2% | 0.0% | 0.6% | 0.0% | 46.3% | 1.3% | 0.3% | 26.3% |
| 2012 | 2627 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.3% | 3.6% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 9.2% | 8.6% | 4.7% | 0.5% | 0.0% | 2.8% | 0.0% | 36.2% | 2.5% | 0.3% | 25.7% |
| 2013 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 2712 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.6% | 2.5% | 0.0% | 0.6% | 0.3% | 0.4% | 0.0% | 9.1% | 3.5% | 3.3% | 0.5% | 0.7% | 2.9% | 0.0% | 30.3% | 2.6% | 0.6% | 29.0% |
| 1979-1984 | 4406 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.5% | 0.2% | 0.1% | 1.3% | 0.8% | 1.1% | 0.0% | 15.6% | 5.6% | 1.8% | 0.3% | 0.7% | 5.3% | 0.0% | 24.0% | 0.4% | 0.1% | 17.2% |
| 1985-1995 | 1550 |  | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 17.1% | 2.4% | 0.0% | 0.6% | 0.4% | 0.7% | 0.0% | 11.2% | 2.9% | 3.5% | 0.6% | 1.8% | 3.3% | 0.0% | 28.4% | 2.4% | 1.4% | 23.2% |
| 1996-1998 | 812 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 1.0% | 3.8% | 0.4% | 0.0% | 2.0% | 0.0% | 34.4% | 7.5% | 0.7% | 41.9% |
| 1999-2013 | 3307 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.6% | 3.6% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 6.5% | 3.6% | 3.8% | 0.4% | 0.0% | 1.6% | 0.0% | 33.6% | 2.6% | 0.2% | 35.9% |

*Appendix C37. Percent distribution of South Puget Sound Fall Fingerling (Puget Sound Hatchery Fingerling) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | 1026 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 632 | 2,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 1288 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | 3257 | 2,3,4 | 0.2% | 0.1% | 0.0% | 0.2% | 0.0% | 22.3% | 0.1% | 2.1% | 11.5% | 0.9% | 1.8% | 0.0% | 2.6% | 0.1% | 0.0% | 0.0% | 0.0% | 24.4% | 0.0% | 24.2% | 0.0% | 0.2% | 9.2% |
| 1983 | 5054 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.7% | 0.0% | 17.2% | 0.2% | 0.2% | 4.2% | 1.7% | 2.7% | 0.0% | 1.5% | 0.0% | 0.1% | 0.0% | 0.0% | 34.6% | 0.0% | 25.7% | 0.2% | 0.1% | 10.7% |
| 1984 | 4000 | 2,3,4,5 | 0.1% | 0.2% | 0.0% | 0.7% | 0.0% | 21.0% | 0.3% | 1.3% | 7.2% | 1.5% | 0.9% | 0.1% | 1.4% | 0.1% | 0.1% | 0.0% | 0.0% | 24.5% | 0.0% | 23.8% | 0.3% | 0.4% | 16.4% |
| 1985 | 1523 | 2,3,4,5 | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 18.3% | 0.8% | 0.3% | 6.4% | 0.3% | 2.0% | 0.0% | 1.7% | 0.0% | 0.1% | 0.0% | 0.0% | 20.6% | 0.0% | 28.6% | 0.0% | 0.3% | 19.8% |
| 1986 | 558 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.6% | 0.0% | 0.0% | 8.2% | 0.0% | 2.9% | 0.0% | 3.9% | 1.1% | 0.0% | 0.0% | 0.0% | 26.5% | 0.0% | 9.7% | 0.0% | 0.0% | 29.0% |
| 1987 | 594 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.7% | 0.0% | 0.0% | 12.8% | 0.0% | 2.5% | 0.0% | 8.8% | 0.2% | 0.0% | 0.0% | 0.0% | 15.2% | 0.0% | 11.6% | 0.0% | 1.2% | 27.1% |
| 1988 | 2817 | 2,3,4,5 | 0.3% | 0.0% | 0.0% | 0.2% | 0.0% | 9.2% | 3.1% | 0.1% | 17.5% | 0.9% | 3.2% | 0.0% | 6.8% | 0.4% | 0.2% | 0.1% | 0.0% | 20.4% | 0.0% | 20.2% | 0.0% | 0.2% | 17.2% |
| 1989 | 5616 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.3% | 0.0% | 8.8% | 2.5% | 0.2% | 5.0% | 0.4% | 3.5% | 0.0% | 11.2% | 0.3% | 1.0% | 0.1% | 0.0% | 17.2% | 0.0% | 20.6% | 0.0% | 0.2% | 28.7% |
| 1990 | 5952 | 2,3,4,5 | 0.0% | 0.1% | 0.1% | 0.3% | 0.0% | 23.8% | 4.3% | 0.3% | 3.7% | 0.3% | 1.2% | 0.0% | 9.1% | 0.4% | 0.1% | 0.0% | 0.0% | 13.0% | 0.0% | 22.4% | 0.5% | 0.2% | 20.3% |
| 1991 | 1904 | 2,3,4,5 | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 16.5% | 2.7% | 0.2% | 1.7% | 0.1% | 0.9% | 0.0% | 11.3% | 0.3% | 0.9% | 0.0% | 0.0% | 13.9% | 0.0% | 25.4% | 0.3% | 0.2% | 25.2% |
| 1992 | 1623 | 2,3,4,5 | 0.6% | 0.4% | 0.0% | 0.0% | 0.0% | 17.2% | 2.0% | 0.3% | 4.3% | 0.9% | 2.8% | 0.0% | 8.4% | 0.6% | 0.6% | 0.1% | 0.0% | 23.2% | 0.0% | 21.2% | 0.0% | 0.1% | 17.6% |
| 1993 | 1616 | 2,3,4,5 | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 17.9% | 4.5% | 1.0% | 3.6% | 0.1% | 2.5% | 0.0% | 5.8% | 0.2% | 0.0% | 0.0% | 0.0% | 22.8% | 0.0% | 14.8% | 0.0% | 0.1% | 26.3% |
| 1994 | 1909 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 9.3% | 1.2% | 0.0% | 4.9% | 0.0% | 5.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 16.4% | 0.0% | 15.8% | 0.3% | 0.2% | 45.7% |
| 1995 | 4012 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.1% | 0.0% | 5.4% | 1.1% | 0.0% | 2.5% | 0.0% | 1.7% | 0.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 17.5% | 0.0% | 5.8% | 0.0% | 0.3% | 64.1% |
| 1996 | 5219 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 1.7% | 0.0% | 4.9% | 0.0% | 0.5% | 0.0% | 2.6% | 0.0% | 0.2% | 0.0% | 0.0% | 18.0% | 0.0% | 6.3% | 0.3% | 0.2% | 64.1% |
| 1997 | 2736 | 2,3,4,5 | 0.5% | 0.0% | 0.0% | 0.5% | 0.0% | 6.5% | 1.5% | 0.0% | 2.0% | 0.0% | 1.0% | 0.0% | 1.2% | 0.1% | 0.3% | 0.0% | 0.0% | 16.1% | 0.0% | 2.8% | 0.2% | 0.1% | 67.1% |
| 1998 | 1910 | 2,3,4,5 | 1.4% | 0.0% | 0.0% | 0.6% | 0.0% | 0.5% | 1.5% | 0.0% | 2.4% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.5% | 0.0% | 8.1% | 0.5% | 0.2% | 72.4% |
| 1999 | 2291 | 2,3,4,5 | 0.6% | 0.0% | 0.0% | 0.3% | 0.0% | 0.7% | 4.2% | 0.0% | 3.3% | 0.0% | 0.0% | 0.0% | 3.1% | 0.3% | 0.4% | 0.0% | 0.0% | 7.6% | 0.0% | 9.3% | 0.0% | 0.2% | 70.1% |
| 2000 | 2551 | 2,3,4,5 | 0.4% | 0.1% | 0.0% | 0.0% | 0.0% | 9.8% | 4.6% | 0.0% | 2.7% | 0.0% | 0.0% | 0.0% | 0.3% | 0.2% | 0.0% | 0.0% | 0.0% | 13.6% | 0.0% | 12.2% | 0.0% | 0.4% | 55.8% |
| 2001 | 4163 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 8.2% | 3.3% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% | 3.3% | 0.3% | 1.3% | 0.1% | 0.0% | 14.0% | 0.0% | 11.0% | 0.0% | 0.3% | 54.3% |
| 2002 | 3654 | 2,3,4,5 | 0.8% | 0.0% | 0.0% | 0.8% | 0.0% | 11.1% | 3.4% | 0.0% | 5.3% | 0.0% | 0.3% | 0.0% | 3.5% | 0.5% | 0.8% | 0.0% | 0.0% | 9.3% | 0.0% | 17.7% | 0.0% | 0.2% | 46.3% |
| 2003 | 2287 | 2,3,4,5 | 0.7% | 0.0% | 0.0% | 0.8% | 0.0% | 13.5% | 4.3% | 0.0% | 4.3% | 0.0% | 0.0% | 0.0% | 4.2% | 0.4% | 1.1% | 0.0% | 0.0% | 12.0% | 0.0% | 14.1% | 0.0% | 0.1% | 44.5% |
| 2004 | 1866 | 2,3,4,5 | 0.4% | 0.1% | 0.0% | 0.6% | 0.0% | 18.9% | 5.1% | 0.0% | 3.8% | 0.0% | 0.0% | 0.0% | 8.4% | 1.0% | 0.4% | 0.0% | 0.0% | 13.5% | 0.0% | 15.8% | 0.0% | 0.4% | 31.6% |
| 2005 | 1760 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 11.1% | 4.3% | 0.0% | 6.2% | 0.0% | 0.0% | 0.0% | 6.3% | 1.3% | 0.5% | 0.0% | 0.0% | 10.9% | 0.0% | 5.9% | 0.0% | 0.5% | 53.0% |
| 2006 | 3551 | 2,3,4,5 | 0.2% | 0.0% | 0.1% | 0.5% | 0.0% | 11.9% | 2.6% | 0.0% | 3.0% | 0.0% | 0.0% | 0.4% | 6.6% | 0.5% | 0.5% | 0.0% | 0.0% | 9.8% | 0.0% | 14.3% | 0.0% | 0.1% | 49.6% |
| 2007 | 3720 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 11.5% | 4.5% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 5.3% | 0.2% | 0.3% | 0.0% | 0.0% | 16.0% | 0.0% | 15.2% | 0.2% | 0.0% | 44.3% |
| 2008 | 2630 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 7.1% | 3.8% | 0.0% | 2.8% | 0.0% | 0.0% | 0.0% | 3.2% | 0.4% | 0.0% | 0.0% | 0.0% | 14.5% | 0.0% | 17.1% | 0.3% | 0.1% | 50.4% |
| 2009 | 3001 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.2% | 0.0% | 5.0% | 9.0% | 0.0% | 5.0% | 0.0% | 0.0% | 0.0% | 2.8% | 0.3% | 0.0% | 0.0% | 0.0% | 12.9% | 0.0% | 14.9% | 0.3% | 0.3% | 49.3% |
| 2010 | 2940 | 2,3,4,5 | 0.1% | 0.0% | 0.0% | 0.1% | 0.1% | 5.5% | 5.7% | 0.0% | 2.4% | 0.0% | 0.0% | 0.5% | 2.9% | 1.4% | 0.1% | 0.0% | 0.0% | 11.3% | 0.0% | 2.2% | 0.0% | 0.0% | 67.6% |
| 2011 | 2850 | 2,3,4,5 | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 3.5% | 5.6% | 0.0% | 3.9% | 0.0% | 0.0% | 0.0% | 3.2% | 0.4% | 0.1% | 0.0% | 0.0% | 14.9% | 0.0% | 8.3% | 0.0% | 0.0% | 59.7% |
| 2012 | 2746 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 4.3% | 5.2% | 0.0% | 4.9% | 0.0% | 0.0% | 0.0% | 5.5% | 0.7% | 0.7% | 0.0% | 0.0% | 18.9% | 0.0% | 3.0% | 0.0% | 0.1% | 56.7% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 2913 | | 0.3% | 0.0% | 0.0% | 0.3% | 0.0% | 11.5% | 3.0% | 0.2% | 5.0% | 0.2% | 1.1% | 0.0% | 4.4% | 0.4% | 0.3% | 0.0% | 0.0% | 16.6% | 0.0% | 14.4% | 0.1% | 0.2% | 41.7% |
| 1979-1984 | 4104 | | 0.2% | 0.1% | 0.0% | 0.5% | 0.0% | 20.2% | 0.2% | 1.2% | 7.7% | 1.4% | 1.8% | 0.0% | 1.8% | 0.1% | 0.1% | 0.0% | 0.0% | 27.8% | 0.0% | 24.6% | 0.2% | 0.2% | 12.1% |
| 1985-1995 | 2557 | | 0.2% | 0.0% | 0.0% | 0.1% | 0.0% | 15.1% | 2.0% | 0.2% | 6.4% | 0.3% | 2.6% | 0.0% | 6.3% | 0.3% | 0.3% | 0.0% | 0.0% | 18.8% | 0.0% | 17.8% | 0.1% | 0.3% | 29.2% |
| 1996-1998 | 3288 | | 0.7% | 0.0% | 0.0% | 0.4% | 0.0% | 2.7% | 1.6% | 0.0% | 3.1% | 0.0% | 0.5% | 0.0% | 1.6% | 0.0% | 0.2% | 0.0% | 0.0% | 15.2% | 0.0% | 5.7% | 0.3% | 0.2% | 67.9% |
| 1999-2013 | 2858 | | 0.3% | 0.0% | 0.0% | 0.3% | 0.0% | 8.7% | 4.7% | 0.0% | 3.8% | 0.0% | 0.0% | 0.1% | 4.2% | 0.6% | 0.4% | 0.0% | 0.0% | 12.8% | 0.0% | 11.5% | 0.1% | 0.2% | 52.4% |

*Appendix C38. Percent distribution of South Puget Sound Fall Yearling (Puget Sound Hatchery Yearling) total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 19 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | 163 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | 337 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.6% | 0.0% | 0.0% | 2.4% | 2.4% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 67.7% | 0.0% | 14.5% | 1.5% | 0.0% | 7.1% |
| 1983 | 463 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.8% | 0.0% | 0.0% | 0.4% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 78.2% | 0.0% | 8.9% | 0.0% | 0.0% | 5.0% |
| 1984 | 265 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.8% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 46.0% | 0.0% | 32.1% | 0.0% | 0.0% | 13.2% |
| 1985 | 71 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 146 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 744 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | 1431 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.1% | 0.1% | 0.5% | 0.0% | 1.5% | 0.1% | 0.0% | 0.0% | 0.0% | 55.0% | 0.0% | 31.5% | 0.6% | 0.1% | 9.7% |
| 1991 | 1235 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.3% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 2.8% | 0.0% | 0.6% | 0.0% | 0.0% | 62.2% | 0.0% | 11.5% | 0.4% | 0.2% | 16.3% |
| 1992 | 592 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.7% | 1.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 4.6% | 0.7% | 0.0% | 0.0% | 0.0% | 51.2% | 0.0% | 26.9% | 0.0% | 0.2% | 10.0% |
| 1993 | 474 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 69.6% | 0.0% | 7.4% | 2.1% | 0.2% | 16.2% |
| 1994 | 807 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.6% | 0.0% | 0.9% | 0.0% | 2.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 62.7% | 0.0% | 16.5% | 0.0% | 0.0% | 16.1% |
| 1995 | 732 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.3% | 1.5% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 72.4% | 0.0% | 8.9% | 1.5% | 0.1% | 7.4% |
| 1996 | 792 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 1.1% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 90.4% | 0.0% | 2.9% | 0.6% | 0.0% | 2.9% |
| 1997 | 584 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.3% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.5% | 2.1% | 0.7% | 0.0% | 0.0% | 69.9% | 0.0% | 3.4% | 0.0% | 0.0% | 20.5% |
| 1998 | 113 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 85.8% | 0.0% | 4.4% | 0.0% | 0.0% | 8.0% |
| 1999 | 105 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.3% | 0.0% | 0.0% | 0.0% | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 80.0% | 0.0% | 1.0% | 0.0% | 0.0% | 1.9% |
| 2000 | 95 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.3% | 0.0% | 0.0% | 74.7% | 0.0% | 9.5% | 0.0% | 0.0% | 5.3% |
| 2001 | 82 | 2,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 79.3% | 0.0% | 0.0% | 0.0% | 0.0% | 14.6% |
| 2002 | 10 | 2,3,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | 7 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2004 | 263 | 2,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 38.4% | 0.0% | 13.3% | 0.0% | 1.1% | 45.6% |
| 2005 | 317 | 2,3,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 1.3% | 0.0% | 0.0% | 0.0% | 60.6% | 0.0% | 16.7% | 0.0% | 0.0% | 19.2% |
| 2006 | 422 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.5% | 3.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 52.4% | 0.0% | 18.0% | 0.0% | 0.2% | 19.2% |
| 2007 | 343 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.6% | 0.0% | 0.9% | 0.0% | 52.8% | 0.0% | 19.5% | 0.0% | 0.0% | 21.3% |
| 2008 | 137 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.6% | 0.0% | 0.0% | 0.0% | 0.0% | 47.4% | 0.0% | 20.4% | 0.0% | 0.7% | 25.5% |
| 2009 | 217 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 55.8% | 0.0% | 5.5% | 6.9% | 0.0% | 15.2% |
| 2010 | 181 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 0.0% | 3.9% | 0.0% | 0.0% | 0.0% | 0.6% | 1.7% | 0.0% | 0.0% | 0.0% | 32.6% | 0.0% | 7.7% | 0.0% | 2.8% | 49.2% |
| 2011 | 220 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 0.5% | 0.9% | 0.0% | 0.0% | 62.3% | 0.0% | 30.9% | 0.0% | 0.0% | 1.4% |
| 2012 | 209 | 2,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 5.7% | 0.0% | 2.9% | 0.0% | 0.0% | 0.0% | 3.8% | 3.8% | 1.4% | 0.0% | 0.0% | 44.0% | 0.0% | 32.5% | 0.0% | 0.0% | 4.3% |
| 2013 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 434 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 1.6% | 0.0% | 1.4% | 0.2% | 0.1% | 0.0% | 1.5% | 0.4% | 0.4% | 0.0% | 0.0% | 62.1% | 0.0% | 14.3% | 0.6% | 0.2% | 14.8% |
| 1979-1984 | 355 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 0.0% | 0.0% | 1.6% | 1.4% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 64.0% | 0.0% | 18.5% | 0.5% | 0.0% | 8.4% |
| 1985-1995 | 878 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.1% | 0.5% | 0.0% | 1.2% | 0.0% | 0.5% | 0.0% | 1.7% | 0.1% | 0.1% | 0.0% | 0.0% | 62.2% | 0.0% | 17.1% | 0.8% | 0.1% | 12.6% |
| 1996-1998 | 496 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.5% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.8% | 0.7% | 0.2% | 0.0% | 0.0% | 82.0% | 0.0% | 3.6% | 0.2% | 0.0% | 10.5% |
| 1999-2013 | 216 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 2.8% | 0.0% | 1.7% | 0.0% | 0.0% | 0.0% | 1.8% | 0.6% | 0.6% | 0.1% | 0.0% | 56.7% | 0.0% | 14.6% | 0.6% | 0.4% | 18.6% |

*Appendix C39. Percent distribution of Squaxin Pens Fall Yearling (Puget Sound Hatchery Yearling) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 193 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 1023 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | 1733 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.3% | 0.5% | 0.0% | 0.9% | 0.0% | 1.1% | 0.0% | 4.1% | 0.4% | 0.0% | 0.0% | 0.0% | 54.5% | 0.0% | 32.6% | 0.0% | 0.6% | 1.9% |
| 1991 | 927 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.5% | 0.0% | 0.4% | 1.3% | 0.0% | 0.4% | 0.0% | 8.8% | 0.3% | 0.0% | 0.0% | 0.0% | 48.1% | 0.0% | 32.8% | 0.0% | 1.3% | 1.9% |
| 1992 | 817 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.4% | 0.4% | 2.6% | 0.0% | 1.5% | 0.0% | 4.3% | 0.2% | 0.0% | 0.0% | 0.0% | 58.4% | 0.0% | 26.6% | 0.0% | 0.9% | 3.5% |
| 1993 | 335 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.6% | 2.4% | 0.0% | 6.9% | 0.0% | 2.4% | 0.0% | 11.0% | 0.6% | 0.0% | 0.0% | 0.0% | 46.3% | 0.0% | 4.2% | 0.0% | 4.8% | 11.9% |
| 1994 | 175 | 2,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 26.3% | 5.1% | 0.0% | 6.3% | 0.0% | 4.6% | 0.0% | 6.3% | 0.0% | 0.0% | 0.0% | 0.0% | 6.9% | 0.0% | 22.3% | 0.0% | 3.4% | 18.9% |
| 1995 | 219 | 2,3,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 69.4% | 0.0% | 23.3% | 0.0% | 1.8% | 4.1% |
| 1996 | 419 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.2% | 0.0% | 0.0% | 89.5% | 0.0% | 5.5% | 0.2% | 0.7% | 1.4% |
| 1997 | 226 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 0.0% | 88.1% | 0.0% | 6.6% | 0.0% | 0.0% | 0.4% |
| 1998 | 130 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 0.0% | 0.0% | 93.1% | 0.0% | 2.3% | 0.0% | 0.8% | 1.5% |
| 1999 | 182 | 2,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.5% | 0.0% | 0.0% | 92.9% | 0.0% | 0.5% | 0.0% | 1.1% | 1.1% |
| 2000 | 366 | 3,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2001 | 226 | 4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2002 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2004 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2005 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2006 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2007 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2008 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2009 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2010 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2011 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2012 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 516 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.1% | 0.8% | 0.1% | 2.2% | 0.0% | 1.0% | 0.0% | 3.5% | 0.2% | 0.5% | 0.0% | 0.0% | 64.7% | 0.0% | 15.7% | 0.0% | 1.5% | 4.7% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 701 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.6% | 1.4% | 0.1% | 3.1% | 0.0% | 1.7% | 0.0% | 5.8% | 0.3% | 0.0% | 0.0% | 0.0% | 47.3% | 0.0% | 23.6% | 0.0% | 2.1% | 7.1% |
| 1996-1998 | 258 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 1.6% | 0.0% | 0.0% | 90.2% | 0.0% | 4.8% | 0.1% | 0.5% | 1.1% |
| 1999-2013 | 182 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.5% | 0.0% | 0.0% | 92.9% | 0.0% | 0.5% | 0.0% | 1.1% | 1.1% |

*Appendix C40. Percent distribution of Salmon River (Oregon Coast) total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 479 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 852 | 2,3,4 | 29.8% | 0.0% | 0.8% | 10.3% | 0.0% | 7.9% | 0.0% | 0.0% | 0.0% | 1.2% | 1.3% | 0.0% | 0.0% | 0.0% | 0.9% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 16.3% | 0.0% | 31.3% |
| 1981 | 784 | 2,3,4,5 | 22.7% | 0.0% | 0.5% | 24.0% | 0.0% | 3.4% | 0.6% | 0.0% | 0.0% | 0.5% | 2.2% | 0.0% | 0.3% | 0.0% | 0.4% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 16.6% | 0.0% | 28.2% |
| 1982 | 745 | 2,3,4,5,6 | 10.1% | 1.3% | 0.5% | 11.9% | 0.0% | 6.2% | 0.0% | 0.0% | 0.0% | 0.8% | 0.3% | 0.0% | 0.0% | 0.7% | 0.8% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 25.1% | 0.0% | 42.1% |
| 1983 | 663 | 3,4,5,6 | 19.3% | 0.5% | 0.0% | 13.4% | 0.0% | 6.5% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.9% | 0.0% | 37.4% |
| 1984 | 789 | 2,4,5,6 | 12.0% | 0.0% | 0.0% | 17.0% | 0.0% | 3.3% | 0.0% | 0.0% | 0.0% | 3.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.3% | 21.9% | 0.0% | 40.8% |
| 1985 | 387 | 2,3,5,6 | 26.1% | 1.8% | 0.0% | 23.3% | 0.0% | 2.3% | 0.0% | 0.0% | 0.0% | 1.6% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.7% | 0.0% | 32.0% |
| 1986 | 545 | 2,3,4,6 | 19.6% | 0.0% | 0.0% | 14.5% | 0.0% | 2.8% | 0.0% | 0.0% | 0.0% | 3.1% | 0.4% | 0.0% | 0.0% | 0.0% | 0.2% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 36.9% | 0.0% | 22.2% |
| 1987 | 833 | 2,3,4,5 | 15.2% | 0.0% | 0.0% | 14.6% | 0.0% | 2.5% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.2% | 2.2% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 22.4% | 0.0% | 41.7% |
| 1988 | 1343 | 2,3,4,5,6 | 12.7% | 1.0% | 0.0% | 7.2% | 0.0% | 4.3% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.4% | 0.0% | 0.4% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 14.1% | 0.1% | 57.4% |
| 1989 | 1348 | 2,3,4,5,6 | 15.2% | 0.0% | 0.0% | 14.5% | 0.0% | 3.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 2.7% | 0.2% | 0.0% | 0.1% | 0.0% | 0.0% | 22.8% | 0.2% | 39.5% |
| 1990 | 1662 | 2,3,4,5,6 | 16.4% | 1.9% | 0.0% | 11.8% | 1.4% | 7.1% | 0.0% | 0.0% | 0.0% | 0.2% | 0.7% | 0.0% | 1.4% | 0.2% | 1.3% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 22.7% | 0.0% | 33.8% |
| 1991 | 2710 | 2,3,4,5,6 | 22.2% | 0.0% | 0.5% | 15.6% | 0.8% | 5.6% | 0.0% | 0.0% | 0.0% | 0.1% | 0.7% | 0.0% | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.2% | 0.0% | 0.0% | 21.7% | 2.2% | 30.1% |
| 1992 | 3091 | 2,3,4,5,6 | 4.0% | 2.8% | 0.0% | 7.5% | 1.8% | 15.2% | 0.0% | 0.0% | 0.1% | 0.8% | 0.3% | 0.0% | 0.1% | 0.2% | 1.7% | 0.3% | 0.0% | 0.2% | 0.0% | 0.0% | 15.3% | 0.1% | 49.6% |
| 1993 | 2611 | 2,3,4,5,6 | 9.5% | 0.5% | 0.2% | 15.7% | 0.9% | 17.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.3% | 0.0% | 0.4% | 0.1% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.3% | 0.0% | 31.5% |
| 1994 | 4450 | 2,3,4,5,6 | 13.7% | 0.4% | 0.8% | 14.6% | 1.8% | 4.7% | 0.0% | 0.0% | 0.0% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 1.2% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 15.8% | 1.1% | 44.9% |
| 1995 | 4153 | 2,3,4,5,6 | 9.0% | 0.1% | 0.4% | 6.0% | 1.1% | 1.1% | 0.2% | 0.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.9% | 4.6% | 51.1% |
| 1996 | 2281 | 2,3,4,5,6 | 17.9% | 0.0% | 0.0% | 2.3% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 3.2% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 47.9% | 0.3% | 26.7% |
| 1997 | 4602 | 2,3,4,5,6 | 28.7% | 0.0% | 1.5% | 3.1% | 0.4% | 0.2% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.1% | 1.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 18.1% | 0.2% | 46.6% |
| 1998 | 3596 | 2,3,4,5,6 | 9.2% | 0.6% | 0.4% | 9.5% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 27.7% | 0.4% | 49.6% |
| 1999 | 2348 | 2,3,4,5,6 | 16.0% | 0.1% | 0.0% | 5.2% | 4.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.3% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 32.9% | 0.5% | 39.2% |
| 2000 | 2848 | 2,3,4,5,6 | 15.5% | 0.0% | 0.6% | 3.1% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.3% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 20.3% | 0.3% | 57.0% |
| 2001 | 3887 | 2,3,4,5,6 | 15.0% | 0.0% | 0.9% | 3.4% | 1.6% | 0.4% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.2% | 2.3% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 25.8% | 0.4% | 48.6% |
| 2002 | 5206 | 2,3,4,5,6 | 20.0% | 0.0% | 1.0% | 7.2% | 2.4% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.2% | 1.2% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 32.5% | 0.5% | 33.1% |
| 2003 | 5027 | 2,3,4,5,6 | 14.1% | 1.4% | 0.6% | 6.2% | 1.8% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 1.3% | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 33.0% | 0.3% | 38.6% |
| 2004 | 5390 | 2,3,4,5,6 | 18.8% | 1.4% | 0.8% | 7.3% | 4.3% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.1% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 22.9% | 0.1% | 41.0% |
| 2005 | 5032 | 2,3,4,5,6 | 19.3% | 0.0% | 1.2% | 8.1% | 5.0% | 2.3% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.3% | 0.7% | 0.8% | 0.0% | 0.0% | 0.0% | 0.1% | 34.1% | 0.2% | 27.1% |
| 2006 | 2052 | 2,3,4,5,6 | 24.9% | 0.0% | 1.8% | 12.0% | 5.9% | 1.9% | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.9% | 2.7% | 0.0% | 0.0% | 0.0% | 0.0% | 27.7% | 0.6% | 19.1% |
| 2007 | 1006 | 2,3,4,5,6 | 21.1% | 0.0% | 1.4% | 9.8% | 6.8% | 0.2% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 19.3% | 0.3% | 38.9% |
| 2008 | 1935 | 2,3,4,5,6 | 15.7% | 0.0% | 1.4% | 6.8% | 4.8% | 0.6% | 1.1% | 0.0% | 0.1% | 0.0% | 0.3% | 0.0% | 0.7% | 0.1% | 0.2% | 0.6% | 0.1% | 0.0% | 0.0% | 0.0% | 15.7% | 0.1% | 51.7% |
| 2009 | 2584 | 2,3,4,5,6 | 18.5% | 1.0% | 1.7% | 13.1% | 3.6% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.3% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 25.3% | 0.5% | 34.6% |
| 2010 | 4127 | 2,3,4,5,6 | 12.5% | 0.0% | 1.5% | 6.8% | 1.5% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.3% | 0.3% | 0.2% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 43.6% | 0.1% | 32.6% |
| 2011 | 5374 | 2,3,4,5,6 | 11.1% | 0.0% | 0.7% | 5.8% | 2.3% | 2.1% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.6% | 0.3% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 32.2% | 0.2% | 41.1% |
| 2012 | 4254 | 2,3,4,5,6 | 16.2% | 0.3% | 0.5% | 8.7% | 2.2% | 1.8% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.0% | 0.5% | 0.1% | 2.3% | 0.0% | 0.1% | 0.0% | 0.0% | 25.3% | 0.4% | 35.4% |
| 2013 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 2682 |  | 16.7% | 0.5% | 0.6% | 10.3% | 1.8% | 3.2% | 0.3% | 0.0% | 0.0% | 0.4% | 0.3% | 0.0% | 0.3% | 0.2% | 0.8% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 24.8% | 0.4% | 38.6% |
| 1979-1984 | 767 |  | 18.8% | 0.4% | 0.4% | 15.3% | 0.0% | 5.5% | 0.1% | 0.0% | 0.0% | 1.2% | 1.0% | 0.0% | 0.1% | 0.3% | 0.5% | 0.2% | 0.0% | 0.0% | 0.0% | 0.1% | 20.4% | 0.0% | 36.0% |
| 1985-1995 | 2103 |  | 14.9% | 0.8% | 0.2% | 13.2% | 0.7% | 6.1% | 0.0% | 0.0% | 0.0% | 0.7% | 0.3% | 0.0% | 0.2% | 0.1% | 1.1% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 21.1% | 0.8% | 39.4% |
| 1996-1998 | 3493 |  | 18.6% | 0.2% | 0.6% | 4.9% | 0.7% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 1.5% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 31.2% | 0.3% | 41.0% |
| 1999-2013 | 3648 |  | 17.0% | 0.3% | 1.0% | 7.4% | 3.5% | 0.8% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.2% | 0.6% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 27.9% | 0.3% | 38.4% |

*Appendix C41. Percent distribution of Skagit Summer Fingerling (Skagit Wild) total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | 5 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | 12 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1998 | 182 | 2,3,4 | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 6.6% | 0.0% | 3.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 83.0% |
| 1999 | 189 | 2,3,4,5 | 10.6% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 21.2% | 0.0% | 11.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 55.0% |
| 2000 | 279 | 2,3,4,5 | 10.4% | 0.7% | 0.0% | 0.0% | 0.0% | 3.2% | 7.5% | 0.0% | 10.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.8% | 0.0% | 1.8% | 0.0% | 0.4% | 53.4% |
| 2001 | 856 | 2,3,4,5 | 9.6% | 2.7% | 1.1% | 0.0% | 0.0% | 8.6% | 6.5% | 0.0% | 10.2% | 0.0% | 0.0% | 0.5% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 2.7% | 0.0% | 0.7% | 0.0% | 1.6% | 55.7% |
| 2002 | 2250 | 2,3,4,5 | 13.3% | 0.0% | 0.9% | 1.6% | 0.5% | 5.9% | 1.8% | 0.0% | 4.8% | 0.0% | 2.4% | 0.4% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 3.6% | 63.8% |
| 2003 | 876 | 2,3,4,5 | 7.3% | 0.1% | 0.0% | 4.1% | 1.4% | 10.3% | 4.5% | 0.0% | 8.9% | 0.0% | 0.2% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.7% | 0.0% | 0.0% | 61.3% |
| 2004 | 826 | 2,3,4,5 | 5.7% | 0.0% | 0.0% | 2.8% | 0.0% | 11.6% | 1.3% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 1.0% | 0.0% | 10.2% | 64.4% |
| 2005 | 966 | 2,3,4,5 | 8.7% | 0.3% | 0.0% | 1.7% | 2.3% | 7.2% | 4.5% | 0.0% | 5.7% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 3.6% | 0.2% | 0.5% | 63.9% |
| 2006 | 1398 | 2,3,4,5 | 3.6% | 1.2% | 0.2% | 0.6% | 0.9% | 4.2% | .5% | 0.0% | 4.9% | 0.0% | 0.2% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 3.3% | 0.0% | 0.5% | 75.7% |
| 2007 | 1466 | 2,3,4,5 | 6.2% | 0.8% | 0.2% | 1.0% | 0.6% | 8.8% | 3.8% | 0.0% | 0.7% | 0.0% | 0.1% | 0.3% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 3.0% | 0.0% | 0.8% | 72.2% |
| 2008 | 1123 | 2,3,4,5 | 5.6% | 0.0% | 0.0% | 1.4% | 1.0% | 5.3% | 5.9% | 0.0% | 2.3% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 18.3% | 0.0% | 1.6% | 56.7% |
| 2009 | 860 | 2,3,4,5 | 7.7% | 0.9% | 0.8% | 1.6% | 0.0% | 3.6% | 8.8% | 0.0% | 4.3% | 0.0% | 0.0% | 1.2% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 2.9% | 0.0% | 35.1% | 0.0% | 1.2% | 31.6% |
| 2010 | 570 | 2,3,4,5 | 8.4% | 0.5% | 0.2% | 1.6% | 0.0% | 4.6% | 4.2% | 0.0% | 3.5% | 0.0% | 0.5% | 3.5% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 3.3% | 0.0% | 8.1% | 1.1% | 3.7% | 56.1% |
| 2011 | 526 | 2,3,4,5 | 5.5% | 0.0% | 0.6% | 0.0% | 0.0% | 7.0% | 6.8% | 0.0% | 6.1% | 0.0% | 0.0% | 0.8% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 6.8% | 0.0% | 20.9% | 0.0% | 2.3% | 42.0% |
| 2012 | 541 | 2,3,4,5 | 8.9% | 1.5% | 0.0% | 1.7% | 0.4% | 2.8% | 2.4% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 2.8% | 0.0% | 3.1% | 71.3% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 861 | | 7.7% | 0.6% | 0.3% | 1.2% | 0.5% | 5.7% | 6.0% | 0.0% | 5.5% | 0.0% | 0.3% | 0.5% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 0.0% | 6.7% | 0.1% | 2.0% | 60.4% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1996-1998 | 182 | | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 6.6% | 0.0% | 3.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 83.0% |
| 1999-2013 | 909 | | 8.0% | 0.7% | 0.3% | 1.3% | 0.5% | 5.9% | 5.9% | 0.0% | 5.6% | 0.0% | 0.3% | 0.5% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 2.4% | 0.0% | 7.2% | 0.1% | 2.1% | 58.8% |

*Appendix C42. Percent distribution of Stikine River total fishing mortalities among fisheries and escapement.*

| Catch | Estimated | Ages | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # of | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1998 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1999 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2000 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2001 | 7 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2002 | 23 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | 166 | 3,4,5 | 8.4% | 0.6% | 3.6% | 10.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.0% | 75.9% |
| 2004 | 205 | 3,4,5,6 | 13.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 2.4% | 0.5% | 81.0% |
| 2005 | 344 | 3,4,5,6 | 18.0% | 2.6% | 7.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.0% | 1.5% | 0.0% | 45.9% |
| 2006 | 339 | 3,4,5,6 | 15.3% | 4.1% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 36.6% | 0.9% | 0.0% | 41.3% |
| 2007 | 243 | 3,4,5,6 | 18.5% | 0.0% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 22.2% | 2.1% | 0.0% | 55.1% |
| 2008 | 296 | 3,4,5,6 | 10.1% | 0.0% | 1.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 23.3% | 1.0% | 0.0% | 63.9% |
| 2009 | 201 | 3,4,5,6 | 13.4% | 18.9% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 1.5% | 63.7% |
| 2010 | 212 | 3,4,5,6 | 17.9% | 5.7% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.9% | 0.0% | 0.5% | 73.1% |
| 2011 | 267 | 3,4,5,6 | 7.5% | 10.1% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 9.4% | 0.0% | 0.0% | 69.3% |
| 2012 | 514 | 3,4,5,6 | 11.3% | 3.7% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.5% | 0.2% | 0.2% | 80.9% |
| 2013 | 444 | 3,4,5,6 | 5.2% | 5.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 0.5% | 85.1% |
| 1979-2013 | 294 | | 12.7% | 4.6% | 2.2% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.5% | 0.9% | 0.3% | 66.8% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1996-1998 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1999-2013 | 294 | | 12.7% | 4.6% | 2.2% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 11.5% | 0.9% | 0.3% | 66.8% |

Appendix C43. *Percent distribution of Stillaguamish Fall Fingerling (Stillaguamish Wild) total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | 16 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | 57 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984[1] | 108 | 2,3,4 | 0.9% | 0.0% | 0.0% | 3.7% | 0.0% | 10.2% | 0.0% | 0.0% | 16.7% | 16.7% | 21.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 26.9% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% |
| 1985[1] | 113 | 2,3,4,5 | 8.0% | 0.0% | 0.0% | 3.5% | 0.0% | 30.1% | 8.8% | 0.0% | 8.0% | 0.0% | 14.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.7% | 0.0% | 8.8% | 0.0% | 0.9% | 0.0% |
| 1986[1] | 96 | 3,4,5 | 5.2% | 0.0% | 0.0% | 0.0% | 0.0% | 32.3% | 0.0% | 0.0% | 20.8% | 0.0% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21.9% | 0.0% | 15.6% | 0.0% | 0.0% | 0.0% |
| 1987 | 42 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | 113 | 2,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 324 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | 416 | 2,3,4 | 0.7% | 0.0% | 0.0% | 1.0% | 0.0% | 21.2% | 6.0% | 0.7% | 10.3% | 7.7% | 9.4% | 0.2% | 6.5% | 0.0% | 0.0% | 0.0% | 0.0% | 16.3% | 0.0% | 9.1% | 0.0% | 0.0% | 10.8% |
| 1991 | 974 | 2,3,4,5 | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 5.4% | 2.4% | 0.0% | 4.6% | 0.0% | 0.9% | 0.5% | 4.8% | 0.0% | 0.0% | 0.0% | 0.0% | 8.3% | 0.0% | 5.5% | 0.0% | 0.5% | 66.7% |
| 1992 | 927 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 17.4% | 3.6% | 0.0% | 7.0% | 0.0% | 4.1% | 0.0% | 5.4% | 0.0% | 0.0% | 0.0% | 0.0% | 38.5% | 0.0% | 10.9% | 0.0% | 0.0% | 12.7% |
| 1993 | 932 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 13.4% | 9.2% | 0.3% | 9.9% | 0.5% | 2.1% | 0.6% | 5.9% | 0.3% | 0.0% | 0.0% | 0.1% | 21.6% | 0.0% | 1.3% | 0.0% | 3.3% | 30.6% |
| 1994 | 481 | 2,3,4,5 | 2.9% | 0.0% | 0.0% | 0.6% | 0.0% | 7.3% | 5.6% | 0.0% | 9.4% | 0.0% | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 7.1% | 0.0% | 2.1% | 0.0% | 0.0% | 62.6% |
| 1995 | 514 | 2,3,4,5 | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 3.7% | 8.8% | 0.0% | 6.6% | 0.0% | 12.1% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 24.7% | 0.0% | 2.1% | 0.0% | 0.2% | 38.7% |
| 1996 | 849 | 2,3,4,5 | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 6.7% | 0.0% | 9.4% | 0.0% | 8.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.8% | 0.0% | 0.2% | 0.1% | 2.6% | 44.4% |
| 1997 | 849 | 2,3,4,5 | 9.9% | 0.6% | 0.0% | 0.2% | 0.0% | 7.1% | 4.8% | 0.0% | 5.3% | 0.0% | 1.8% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.8% | 0.0% | 1.8% | 0.0% | 1.4% | 47.3% |
| 1998 | 1094 | 2,3,4,5 | 10.4% | 0.4% | 0.3% | 1.7% | 0.0% | 0.9% | 2.6% | 0.0% | 2.2% | 0.0% | 0.5% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.8% | 0.0% | 1.7% | 0.0% | 13.3% | 62.8% |
| 1999 | 489 | 2,3,4,5 | 1.0% | 1.0% | 0.0% | 0.0% | 0.0% | 4.5% | 10.6% | 0.0% | 9.2% | 0.0% | 0.6% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.3% | 0.0% | 0.6% | 0.0% | 5.3% | 61.3% |
| 2000 | 816 | 2,3,4,5 | 5.1% | 0.0% | 0.0% | 0.0% | 0.0% | 7.4% | 1.6% | 0.0% | 2.2% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 2.7% | 0.0% | 0.1% | 0.0% | 0.6% | 79.8% |
| 2001 | 304 | 3,4,5 | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.3% | 4.6% | 0.0% | 5.3% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 15.5% | 0.0% | 1.3% | 0.0% | 1.0% | 64.8% |
| 2002 | 246 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | 13 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2004 | 139 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2005 | 541 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2006 | 854 | 2,3,4 | 2.3% | 0.1% | 0.0% | 0.0% | 0.0% | 14.2% | 1.4% | 0.0% | 4.3% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 4.0% | 0.0% | 2.3% | 0.0% | 13.5% | 57.0% |
| 2007 | 808 | 2,3,4,5 | 1.0% | 1.1% | 0.0% | 0.0% | 0.0% | 14.9% | 5.8% | 0.0% | 14.7% | 0.0% | 1.0% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.1% | 9.5% | 0.0% | 4.5% | 0.0% | 5.4% | 40.1% |
| 2008 | 1203 | 2,3,4,5 | 2.5% | 0.0% | 0.0% | 0.0% | 0.0% | 4.7% | 5.6% | 0.0% | 5.7% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 12.0% | 0.0% | 3.8% | 0.0% | 3.9% | 61.8% |
| 2009 | 1001 | 2,3,4,5 | 1.2% | 0.1% | 0.3% | 0.3% | 0.6% | 2.1% | 4.3% | 0.0% | 10.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 12.0% | 0.0% | 5.0% | 0.0% | 5.0% | 58.9% |
| 2010 | 867 | 2,3,4,5 | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 8.2% | 8.3% | 0.0% | 9.2% | 0.0% | 0.0% | 0.7% | 2.3% | 0.5% | 0.0% | 0.0% | 0.0% | 9.7% | 0.0% | 5.9% | 0.0% | 1.3% | 52.9% |
| 2011 | 1343 | 2,3,4,5 | 1.5% | 0.2% | 0.0% | 0.0% | 0.0% | 4.8% | 7.7% | 0.0% | 8.6% | 0.0% | 0.0% | 3.1% | 0.7% | 0.2% | 0.0% | 0.0% | 0.0% | 5.7% | 0.0% | 2.5% | 0.1% | 2.8% | 61.9% |
| 2012 | 1091 | 2,3,4,5 | 1.6% | 0.3% | 0.0% | 0.3% | 0.0% | 3.9% | 3.4% | 0.0% | 6.7% | 0.0% | 0.0% | 0.5% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 4.9% | 0.0% | 1.4% | 0.0% | 8.0% | 68.8% |
| 2013 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 733 |  | 2.8% | 0.2% | 0.0% | 0.6% | 0.0% | 10.0% | 5.1% | 0.0% | 8.5% | 1.1% | 3.8% | 0.3% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 14.2% | 0.0% | 4.1% | 0.0% | 3.1% | 44.7% |
| 1979-1984 | 108 |  | 0.9% | 0.0% | 0.0% | 3.7% | 0.0% | 10.2% | 0.0% | 0.0% | 16.7% | 16.7% | 21.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 26.9% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 557 |  | 2.4% | 0.0% | 0.0% | 0.8% | 0.0% | 16.3% | 5.5% | 0.1% | 9.6% | 1.0% | 6.2% | 0.2% | 2.9% | 0.0% | 0.0% | 0.0% | 0.0% | 19.5% | 0.0% | 6.9% | 0.0% | 0.6% | 27.8% |
| 1996-1998 | 931 |  | 7.1% | 0.3% | 0.1% | 0.7% | 0.0% | 3.0% | 4.7% | 0.0% | 5.6% | 0.0% | 3.6% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.8% | 0.0% | 1.2% | 0.0% | 5.8% | 51.5% |
| 1999-2013 | 878 |  | 1.9% | 0.3% | 0.0% | 0.1% | 0.1% | 7.0% | 5.3% | 0.0% | 7.6% | 0.0% | 0.2% | 0.5% | 0.7% | 0.1% | 0.0% | 0.0% | 0.0% | 8.1% | 0.0% | 2.7% | 0.0% | 4.7% | 60.7% |

[1] Estimates for this year can only be used for distribution of fishing mortalities because the escapement data are insufficient.

*Appendix C44. Percent distribution of Columbia River Summers (Columbia River Summer) total fishing mortalities among fisheries and escapement.*

| | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 196 | 2,3,4 | 15.3% | 0.0% | 1.0% | 8.2% | 0.0% | 17.9% | 0.0% | 2.6% | 4.6% | 3.6% | 10.2% | 1.5% | 0.0% | 2.6% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 4.1% | 0.0% | 3.6% | 23.5% |
| 1980 | 333 | 3,4,5 | 33.6% | 0.0% | 0.9% | 9.0% | 0.0% | 17.7% | 0.0% | 0.0% | 0.0% | 4.2% | 1.2% | 0.0% | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 1.8% | 29.1% |
| 1981 | 296 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | 23 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | 6 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | 33 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 116 | 2,3,4 | 13.8% | 0.9% | 0.0% | 5.2% | 0.0% | 11.2% | 0.0% | 0.0% | 3.4% | 2.6% | 5.2% | 0.0% | 13.8% | 0.9% | 8.6% | 0.0% | 0.0% | 0.0% | 0.0% | 6.9% | 0.0% | 3.4% | 24.1% |
| 1988 | 313 | 2,3,4,5 | 1.6% | 3.5% | 0.0% | 9.3% | 1.9% | 20.4% | 4.2% | 0.0% | 0.0% | 0.0% | 8.6% | 0.0% | 3.2% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 13.4% | 2.6% | 0.0% | 31.0% |
| 1989 | 702 | 2,3,4,5 | 7.7% | 2.8% | 0.6% | 5.6% | 0.0% | 16.5% | 2.3% | 0.0% | 1.6% | 0.6% | 2.3% | 0.6% | 10.0% | 2.6% | 5.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.7% | 0.0% | 0.0% | 34.3% |
| 1990 | 861 | 2,3,4,5 | 10.8% | 0.0% | 0.0% | 7.8% | 0.0% | 21.1% | 0.0% | 0.0% | 0.6% | 1.2% | 1.6% | 0.0% | 3.6% | 1.4% | 2.4% | 0.9% | 0.0% | 0.0% | 0.0% | 10.7% | 0.2% | 0.5% | 37.2% |
| 1991 | 599 | 2,3,4,5 | 5.3% | 0.0% | 0.0% | 2.8% | 0.0% | 7.7% | 0.8% | 0.0% | 0.0% | 0.7% | 3.3% | 0.0% | 3.0% | 1.7% | 1.3% | 0.5% | 0.0% | 0.0% | 0.0% | 4.8% | 0.5% | 0.8% | 66.6% |
| 1992 | 305 | 2,3,4,5 | 18.0% | 0.0% | 0.0% | 3.3% | 0.0% | 16.4% | 0.0% | 0.0% | 0.7% | 2.0% | 1.0% | 0.0% | 3.9% | 0.0% | 2.6% | 0.0% | 0.0% | 1.6% | 0.0% | 1.3% | 0.0% | 0.7% | 48.5% |
| 1993 | 210 | 2,3,4,5 | 7.6% | 0.0% | 0.0% | 1.4% | 0.0% | 16.7% | 1.9% | 0.0% | 0.0% | 0.0% | 2.4% | 0.0% | 3.3% | 1.4% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 3.3% | 0.0% | 0.5% | 59.5% |
| 1994 | 37 | 2,3,4,5 | 16.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.8% | 0.0% | 0.0% | 56.8% |
| 1995 | 158 | 2,3,4,5 | 3.2% | 0.0% | 0.0% | 0.0% | 0.0% | 7.6% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 83.5% |
| 1996 | 373 | 2,3,4,5 | 10.7% | 1.1% | 0.0% | 2.1% | 0.3% | 2.9% | 0.0% | 0.0% | 2.4% | 0.0% | 3.8% | 0.0% | 0.5% | 0.0% | 2.4% | 0.8% | 0.0% | 1.3% | 0.0% | 0.0% | 2.4% | 1.3% | 67.8% |
| 1997 | 1275 | 2,3,4,5 | 9.3% | 0.0% | 3.8% | 0.2% | 1.3% | 1.9% | 0.0% | 0.0% | 0.2% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 3.2% | 0.0% | 0.0% | 0.2% | 0.0% | 0.2% | 0.5% | 0.2% | 78.8% |
| 1998 | 1566 | 2,3,4,5 | 9.9% | 0.2% | 1.1% | 0.1% | 2.1% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.1% | 0.2% | 0.6% | 0.0% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.9% | 0.3% | 81.7% |
| 1999 | 947 | 2,3,4,5 | 14.3% | 0.7% | 3.1% | 0.6% | 1.1% | 0.6% | 5.2% | 0.0% | 0.6% | 0.0% | 0.5% | 1.2% | 5.4% | 0.4% | 3.8% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 2.6% | 0.0% | 58.8% |
| 2000 | 2789 | 2,3,4,5 | 24.6% | 1.6% | 3.3% | 0.6% | 2.2% | 4.4% | 5.3% | 0.0% | 0.9% | 0.0% | 0.0% | 0.5% | 1.0% | 1.4% | 2.2% | 0.0% | 0.1% | 0.0% | 0.0% | 1.4% | 2.0% | 0.4% | 48.2% |
| 2001 | 7369 | 2,3,4,5 | 15.6% | 2.5% | 1.3% | 0.5% | 0.9% | 13.0% | 2.6% | 0.0% | 0.2% | 0.0% | 0.0% | 0.6% | 7.0% | 2.3% | 9.9% | 1.3% | 0.0% | 1.1% | 0.0% | 0.7% | 1.5% | 0.5% | 38.3% |
| 2002 | 11123 | 2,3,4,5 | 23.2% | 0.0% | 1.5% | 12.8% | 1.7% | 14.2% | 1.3% | 0.0% | 0.1% | 0.0% | 0.0% | 0.3% | 5.4% | 3.0% | 3.5% | 0.6% | 0.0% | 0.0% | 0.0% | 1.0% | 2.2% | 0.3% | 29.0% |
| 2003 | 7841 | 2,3,4,5 | 27.9% | 0.7% | 1.1% | 12.0% | 1.3% | 11.3% | 0.3% | 0.0% | 0.1% | 0.0% | 0.0% | 0.9% | 2.9% | 0.4% | 3.8% | 0.6% | 0.0% | 0.1% | 0.0% | 2.7% | 5.6% | 0.3% | 28.0% |
| 2004 | 4861 | 2,3,4,5 | 14.4% | 0.4% | 1.2% | 5.4% | 1.5% | 12.5% | 1.4% | 0.0% | 0.2% | 0.0% | 0.0% | 0.2% | 4.9% | 0.6% | 5.8% | 0.9% | 0.0% | 0.3% | 0.0% | 7.4% | 14.4% | 0.1% | 28.4% |
| 2005 | 10031 | 2,3,4,5 | 9.1% | 0.0% | 0.6% | 6.0% | 2.5% | 10.4% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 2.6% | 0.3% | 3.7% | 0.2% | 0.0% | 0.0% | 0.0% | 6.8% | 7.6% | 0.0% | 49.1% |
| 2006 | 3844 | 2,3,4,5 | 12.0% | 0.1% | 0.5% | 3.7% | 0.5% | 11.3% | 1.3% | 0.0% | 0.2% | 0.0% | 0.1% | 0.5% | 2.8% | 0.1% | 0.4% | 0.3% | 0.2% | 0.1% | 0.0% | 12.9% | 10.2% | 0.0% | 42.7% |
| 2007 | 5573 | 2,3,4,5 | 9.8% | 1.9% | 1.2% | 1.2% | 1.7% | 5.3% | 1.2% | 0.0% | 0.3% | 0.0% | 0.8% | 0.3% | 2.5% | 0.1% | 1.4% | 0.4% | 0.0% | 0.5% | 0.0% | 8.7% | 15.8% | 0.4% | 46.4% |
| 2008 | 4742 | 2,3,4,5 | 8.8% | 0.1% | 0.3% | 1.0% | 0.6% | 6.4% | 3.2% | 0.0% | 0.0% | 0.0% | 0.1% | 0.6% | 3.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 19.3% | 10.5% | 0.2% | 45.2% |
| 2009 | 3797 | 2,3,4,5 | 8.7% | 0.1% | 0.4% | 1.4% | 0.7% | 6.2% | 4.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 1.6% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.5% | 6.5% | 0.0% | 52.5% |
| 2010 | 2123 | 2,3,4,5 | 9.0% | 0.1% | 0.5% | 1.7% | 2.0% | 3.3% | 0.7% | 0.0% | 1.2% | 0.0% | 0.0% | 1.1% | 2.4% | 0.6% | 2.2% | 0.4% | 0.0% | 0.0% | 0.0% | 20.3% | 9.1% | 1.5% | 43.8% |
| 2011 | 1846 | 2,3,4,5 | 12.1% | 0.2% | 0.9% | 2.3% | 0.7% | 4.2% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.9% | 2.7% | 0.3% | 0.0% | 0.0% | 0.0% | 23.1% | 11.3% | 3.4% | 33.3% |
| 2012 | 1615 | 2,3,4,5 | 9.3% | 1.4% | 0.0% | 2.0% | 0.5% | 8.0% | 5.4% | 0.0% | 0.1% | 0.0% | 0.0% | 0.4% | 6.8% | 2.4% | 3.7% | 0.9% | 0.0% | 1.0% | 0.0% | 14.7% | 15.0% | 4.3% | 24.0% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 2698 | | 12.9% | 0.7% | 0.8% | 3.8% | 0.8% | 9.6% | 1.6% | 0.1% | 0.6% | 0.5% | 1.5% | 0.9% | 3.4% | 0.9% | 2.6% | 0.3% | 0.1% | 0.2% | 0.0% | 7.2% | 4.3% | 0.9% | 46.1% |
| 1979-1984 | 264 | | 24.5% | 0.0% | 1.0% | 8.6% | 0.0% | 17.8% | 0.0% | 1.3% | 2.3% | 3.9% | 5.7% | 0.8% | 0.9% | 1.3% | 0.0% | 0.8% | 0.0% | 0.0% | 0.0% | 2.3% | 0.0% | 2.7% | 26.3% |
| 1985-1995 | 367 | | 9.4% | 0.8% | 0.1% | 3.9% | 0.2% | 13.1% | 1.0% | 0.0% | 0.7% | 0.8% | 2.9% | 1.9% | 4.7% | 0.9% | 2.5% | 0.2% | 0.3% | 0.2% | 0.0% | 6.6% | 0.4% | 0.7% | 49.1% |
| 1996-1998 | 1071 | | 10.0% | 0.4% | 1.6% | 0.8% | 1.2% | 1.6% | 0.2% | 0.0% | 0.9% | 0.0% | 1.4% | 0.1% | 0.4% | 0.0% | 2.3% | 0.3% | 0.0% | 0.5% | 0.0% | 0.4% | 1.3% | 0.6% | 76.1% |
| 1999-2013 | 4893 | | 14.2% | 0.7% | 1.1% | 3.7% | 1.3% | 7.9% | 2.6% | 0.0% | 0.3% | 0.0% | 0.1% | 0.5% | 3.6% | 1.0% | 3.1% | 0.4% | 0.0% | 0.2% | 0.0% | 9.8% | 8.2% | 0.8% | 40.6% |

*Appendix C45. Percent distribution of Taku River total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 217 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 300 | 3,4,5 | 3.7% | 0.0% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.0% | 0.0% | 0.0% | 89.7% |
| 1981 | 448 | 3,4,5,6 | 5.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 94.4% |
| 1982 | 267 | 3,4,5,6 | 7.5% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 89.9% |
| 1983 | 166 | 3,4,5,6 | 1.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.6% | 96.4% |
| 1984 | 358 | 3,4,5,6 | 10.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 88.0% |
| 1985 | 342 | 4,5,6 | 2.9% | 0.0% | 8.5% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 87.7% |
| 1986 | 166 | 5,6 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 50 | 6 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | 69 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | 178 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | 379 | 3,4,5 | 1.6% | 0.0% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 94.5% |
| 1997 | 641 | 3,4,5,6 | 0.3% | 0.0% | 10.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 87.8% |
| 1998 | 390 | 3,4,5,6 | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 99.0% |
| 1999 | 625 | 3,4,5,6 | 1.9% | 0.0% | 4.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.3% | 0.0% | 0.2% | 89.6% |
| 2000 | 1109 | 3,4,5,6 | 2.0% | 0.5% | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 94.8% |
| 2001 | 993 | 3,4,5,6 | 3.6% | 0.1% | 3.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 0.2% | 90.1% |
| 2002 | 923 | 3,4,5,6 | 3.5% | 0.0% | 7.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 0.0% | 87.8% |
| 2003 | 910 | 3,4,5,6 | 2.3% | 0.1% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.9% | 0.0% | 0.1% | 94.1% |
| 2004 | 2183 | 3,4,5,6 | 3.2% | 0.3% | 3.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.9% | 0.0% | 0.0% | 88.4% |
| 2005 | 1253 | 3,4,5,6 | 3.4% | 0.2% | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 31.0% | 0.0% | 0.0% | 61.9% |
| 2006 | 893 | 3,4,5,6 | 3.5% | 0.0% | 3.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.7% | 0.0% | 0.1% | 76.3% |
| 2007 | 391 | 3,4,5,6 | 6.9% | 4.1% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.1% | 0.0% | 0.0% | 82.6% |
| 2008 | 631 | 3,4,5,6 | 4.8% | 2.2% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 0.0% | 0.2% | 91.0% |
| 2009 | 341 | 3,4,5,6 | 8.8% | 0.0% | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 12.6% | 0.0% | 0.0% | 76.2% |
| 2010 | 227 | 3,4,5,6 | 4.4% | 0.0% | 2.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 92.1% |
| 2011 | 377 | 3,4,5,6 | 6.6% | 0.8% | 2.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.9% | 0.0% | 0.8% | 86.2% |
| 2012 | 499 | 3,4,5,6 | 5.6% | 0.4% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 92.8% |
| 2013 | 694 | 4,5,6 | 1.6% | 0.3% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 96.5% |
| 1979-2013 | 639 |  | 4.0% | 0.4% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.1% | 0.0% | 0.1% | 88.7% |
| 1979-1984 | 308 |  | 5.7% | 0.3% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.0% | 0.1% | 91.7% |
| 1985-1995 | 342 |  | 2.9% | 0.0% | 8.5% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 87.7% |
| 1996-1998 | 470 |  | 1.0% | 0.0% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 93.8% |
| 1999-2013 | 803 |  | 4.1% | 0.6% | 2.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.9% | 0.0% | 0.1% | 86.7% |

*Appendix C46. Percent distribution of Unuk River total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | 29 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | 578 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | 409 | 3,4,5 | 10.5% | 0.2% | 3.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 84.4% |
| 1988 | 413 | 3,4,5,6 | 6.8% | 1.0% | 1.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 90.3% |
| 1989 | 167 | 3,4,5,6 | 15.6% | 3.6% | 0.0% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 77.8% |
| 1990 | 181 | 4,5,6 | 28.2% | 0.6% | 11.6% | 2.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 56.9% |
| 1991 | 138 | 5,6 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | 144 | 6 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | 1 | 3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | 32 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | 160 | 3,4,5 | 11.9% | 6.9% | 5.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 76.3% |
| 1998 | 479 | 3,4,5,6 | 9.6% | 2.1% | 3.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 83.7% |
| 1999 | 767 | 3,4,5,6 | 7.8% | 0.7% | 12.9% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 75.7% |
| 2000 | 1097 | 3,4,5,6 | 9.8% | 2.5% | 9.1% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 75.2% |
| 2001 | 1422 | 3,4,5,6 | 8.3% | 0.6% | 4.4% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 83.7% |
| 2002 | 969 | 3,4,5,6 | 8.8% | 0.6% | 4.9% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.8% | 82.9% |
| 2003 | 706 | 3,4,5,6 | 11.0% | 0.1% | 5.4% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 79.0% |
| 2004 | 733 | 3,4,5,6 | 7.2% | 15.7% | 4.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 72.3% |
| 2005 | 753 | 3,4,5,6 | 21.8% | 2.4% | 7.8% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.7% | 62.8% |
| 2006 | 822 | 3,4,5,6 | 11.9% | 7.5% | 3.6% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.7% | 73.5% |
| 2007 | 680 | 3,4,5,6 | 16.3% | 6.9% | 3.2% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 71.9% |
| 2008 | 363 | 3,4,5,6 | 15.7% | 4.1% | 0.8% | 0.0% | 3.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 74.7% |
| 2009 | 401 | 3,4,5,6 | 14.7% | 1.5% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 77.6% |
| 2010 | 428 | 3,4,5,6 | 18.2% | 0.9% | 6.3% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4.4% | 69.4% |
| 2011 | 285 | 3,4,5,6 | 20.7% | 4.2% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 71.6% |
| 2012 | 209 | 3,4,5,6 | 35.9% | 8.6% | 6.7% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.3% | 42.1% |
| 2013 | 182 | 4,5,6 | 17.0% | 15.4% | 2.2% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.8% | 61.0% |
| 1979-2013 | 554 |  | 14.7% | 4.1% | 4.8% | 0.5% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.7% | 73.5% |
| 1979-1984 | 0 |  | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 292 |  | 15.3% | 1.3% | 4.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 77.4% |
| 1996-1998 | 320 |  | 10.7% | 4.5% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 80.0% |
| 1999-2013 | 654 |  | 15.0% | 4.8% | 5.1% | 0.3% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.1% | 71.6% |

*Appendix C47. Percent distribution of Columbia River Upriver Bright (Columbia River Upriver Brights) total fishing mortalities among fisheries and escapement.*

|  | Estimated |  | AABM |  |  |  |  |  |  | ISBM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Catch | # of | Ages | SEAK |  |  | NBC |  | WCVI |  | Geo St |  | Cent. | Canada | NBC | N Falcon |  | S Falcon |  | Pgt Snd |  | Terminal |  |  |  |  |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 5546 | 2,3,4 | 18.4% | 0.3% | 0.6% | 7.7% | 0.0% | 12.8% | 0.0% | 0.4% | 0.1% | 4.0% | 4.4% | 0.1% | 1.2% | 1.1% | 0.1% | 0.1% | 0.1% | 0.3% | 0.0% | 22.4% | 0.5% | 0.0% | 25.4% |
| 1980 | 3697 | 2,3,4,5 | 20.8% | 0.8% | 0.6% | 6.7% | 0.0% | 7.6% | 0.0% | 0.5% | 0.6% | 1.6% | 1.9% | 0.1% | 1.0% | 0.7% | 0.1% | 0.1% | 0.0% | 0.4% | 0.0% | 6.4% | 0.7% | 0.0% | 49.6% |
| 1981 | 2331 | 2,3,4,5 | 17.1% | 0.2% | 0.3% | 5.8% | 0.0% | 4.0% | 0.2% | 0.2% | 0.2% | 1.1% | 1.8% | 0.0% | 0.4% | 0.9% | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 3.6% | 0.0% | 0.0% | 63.8% |
| 1982 | 1428 | 2,3,4,5 | 8.9% | 0.4% | 0.3% | 4.0% | 0.0% | 5.2% | 0.0% | 0.0% | 0.1% | 0.3% | 1.7% | 0.0% | 0.7% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.6% | 0.0% | 0.2% | 75.1% |
| 1983 | 960 | 2,3,4,5 | 22.1% | 0.2% | 0.0% | 11.3% | 0.0% | 3.9% | 0.0% | 0.0% | 0.2% | 2.0% | 3.4% | 0.2% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7.7% | 0.0% | 1.1% | 47.4% |
| 1984 | 1817 | 2,3,4,5 | 20.1% | 0.9% | 0.2% | 10.4% | 0.2% | 8.4% | 0.2% | 0.0% | 0.2% | 2.3% | 1.7% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.8% | 0.0% | 17.2% | 0.9% | 1.2% | 35.1% |
| 1985 | 2721 | 2,3,4,5 | 14.3% | 2.3% | 0.1% | 7.3% | 0.0% | 6.8% | 0.2% | 0.0% | 0.1% | 0.1% | 2.9% | 0.0% | 0.1% | 0.4% | 0.4% | 0.1% | 0.0% | 0.4% | 0.0% | 30.2% | 2.5% | 1.0% | 30.7% |
| 1986 | 3142 | 2,3,4,5 | 8.7% | 1.2% | 0.1% | 6.5% | 0.0% | 10.6% | 0.2% | 0.0% | 0.3% | 1.4% | 1.7% | 0.0% | 0.9% | 0.2% | 0.7% | 0.1% | 0.0% | 0.7% | 0.0% | 32.2% | 2.5% | 0.2% | 31.7% |
| 1987 | 3740 | 2,3,4,5 | 17.4% | 1.6% | 0.4% | 11.7% | 0.0% | 7.9% | 0.5% | 0.0% | 0.1% | 1.8% | 0.6% | 0.0% | 0.3% | 0.4% | 1.0% | 0.1% | 0.0% | 0.2% | 0.0% | 34.1% | 2.9% | 0.0% | 19.0% |
| 1988 | 3049 | 2,3,4,5 | 10.9% | 1.6% | 0.4% | 8.7% | 0.0% | 11.7% | 0.0% | 0.0% | 0.0% | 0.5% | 0.6% | 0.0% | 0.9% | 0.3% | 1.1% | 0.2% | 0.1% | 0.1% | 0.0% | 43.1% | 2.2% | 0.2% | 17.4% |
| 1989 | 1325 | 2,3,4,5 | 14.6% | 0.0% | 0.2% | 15.2% | 0.5% | 8.1% | 0.0% | 0.0% | 0.0% | 0.2% | 1.4% | 0.0% | 0.8% | 0.2% | 0.5% | 0.2% | 0.0% | 0.0% | 0.0% | 40.8% | 1.5% | 0.2% | 15.7% |
| 1990 | 711 | 2,3,4,5 | 14.2% | 0.0% | 1.0% | 10.8% | 0.0% | 8.7% | 0.0% | 0.0% | 0.0% | 0.7% | 0.7% | 0.0% | 1.3% | 0.4% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 33.1% | 1.1% | 0.0% | 27.1% |
| 1991 | 299 | 2,3,4,5 | 7.4% | 2.0% | 3.3% | 6.7% | 0.0% | 10.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.4% | 4.0% | 0.0% | 45.2% |
| 1992 | 332 | 2,3,4,5 | 3.6% | 1.5% | 0.0% | 3.6% | 0.0% | 12.0% | 1.2% | 0.0% | 0.0% | 0.0% | 3.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.1% | 6.3% | 0.0% | 50.0% |
| 1993 | 600 | 2,3,4,5 | 15.3% | 0.0% | 0.0% | 7.8% | 0.5% | 19.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.5% | 1.2% | 1.2% | 0.0% | 0.0% | 0.7% | 0.0% | 14.3% | 4.0% | 0.0% | 34.8% |
| 1994 | 982 | 2,3,4,5 | 10.8% | 2.5% | 0.0% | 8.1% | 1.2% | 7.1% | 0.6% | 0.0% | 0.0% | 0.2% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.6% | 8.8% | 0.0% | 46.0% |
| 1995 | 746 | 2,3,4,5 | 10.1% | 0.0% | 2.4% | 2.7% | 0.0% | 7.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.7% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10.3% | 3.8% | 0.1% | 61.7% |
| 1996 | 805 | 2,3,4,5 | 4.5% | 0.0% | 0.0% | 1.5% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.2% | 0.1% | 0.0% | 0.6% | 0.0% | 0.0% | 0.4% | 0.0% | 22.6% | 5.6% | 0.0% | 63.5% |
| 1997 | 1050 | 2,3,4,5 | 13.2% | 0.7% | 3.1% | 5.0% | 0.0% | 0.5% | 0.1% | 0.0% | 0.4% | 0.6% | 0.0% | 0.5% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.3% | 9.9% | 0.0% | 44.9% |
| 1998 | 743 | 2,3,4,5 | 10.9% | 4.3% | 2.8% | 2.4% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15.2% | 8.9% | 0.1% | 54.9% |
| 1999 | 1422 | 2,3,4,5 | 14.1% | 0.0% | 2.7% | 7.7% | 0.8% | 0.0% | 0.4% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.4% | 0.1% | 0.0% | 0.0% | 0.0% | 13.6% | 8.0% | 0.2% | 51.3% |
| 2000 | 963 | 2,3,4,5 | 25.5% | 0.1% | 3.0% | 0.0% | 0.0% | 1.5% | 2.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 19.4% | 4.5% | 0.3% | 42.0% |
| 2001 | 1335 | 2,3,4,5 | 6.4% | 0.0% | 1.3% | 0.0% | 0.0% | 1.1% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 1.8% | 0.2% | 0.4% | 0.1% | 0.0% | 0.0% | 0.0% | 16.6% | 8.5% | 1.0% | 61.2% |
| 2002 | 1787 | 2,3,4,5 | 16.6% | 0.0% | 2.7% | 1.8% | 0.9% | 1.7% | 0.7% | 0.0% | 0.6% | 0.0% | 1.5% | 0.0% | 1.6% | 0.9% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 17.4% | 8.6% | 1.0% | 43.7% |
| 2003 | 2358 | 2,3,4,5 | 14.3% | 1.3% | 0.5% | 5.5% | 1.0% | 0.8% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.5% | 0.5% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 15.1% | 6.8% | 0.4% | 52.4% |
| 2004 | 2507 | 2,3,4,5 | 11.0% | 2.0% | 0.5% | 3.8% | 1.2% | 2.1% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.3% | 1.0% | 1.2% | 0.0% | 0.2% | 0.0% | 0.2% | 0.0% | 16.0% | 6.3% | 0.0% | 53.9% |
| 2005 | 2625 | 2,3,4,5 | 14.9% | 1.4% | 1.0% | 9.5% | 2.2% | 3.5% | 2.3% | 0.0% | 1.6% | 0.0% | 0.0% | 1.2% | 0.5% | 1.3% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 13.6% | 7.0% | 0.0% | 39.5% |
| 2006 | 1706 | 2,3,4,5 | 14.0% | 1.7% | 1.3% | 6.9% | 1.9% | 1.5% | 2.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% | 0.4% | 0.4% | 0.0% | 0.0% | 0.3% | 0.0% | 13.1% | 15.4% | 0.2% | 39.9% |
| 2007 | 637 | 2,3,4,5 | 10.7% | 0.2% | 1.1% | 5.2% | 5.5% | 1.1% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.3% | 20.7% | 0.0% | 39.9% |
| 2008 | 889 | 2,3,4,5 | 13.3% | 0.6% | 0.0% | 2.9% | 1.8% | 1.8% | 3.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 19.2% | 8.2% | 0.3% | 46.0% |
| 2009 | 1410 | 2,3,4,5 | 21.0% | 1.6% | 1.7% | 8.8% | 1.3% | 0.6% | 1.6% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.6% | 1.1% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 23.0% | 6.0% | 0.3% | 31.1% |
| 2010 | 1781 | 2,3,4,5 | 5.1% | 0.4% | 2.5% | 1.7% | 1.2% | 0.8% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 2.2% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 20.0% | 4.6% | 0.7% | 56.8% |
| 2011 | 3236 | 2,3,4,5 | 10.1% | 0.2% | 0.8% | 2.8% | 2.2% | 1.5% | 2.5% | 0.0% | 0.1% | 0.0% | 0.0% | 0.8% | 1.2% | 0.9% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 27.1% | 10.4% | 0.0% | 39.1% |
| 2012 | 5305 | 2,3,4,5 | 6.6% | 0.8% | 0.5% | 2.6% | 0.6% | 0.9% | 1.6% | 0.0% | 0.2% | 0.0% | 0.0% | 0.4% | 1.9% | 0.8% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 16.9% | 19.4% | 0.2% | 46.4% |
| 2013 | No Data |  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 1882 |  | 13.1% | 0.9% | 1.0% | 6.0% | 0.7% | 5.0% | 0.7% | 0.0% | 0.2% | 0.5% | 0.9% | 0.1% | 0.7% | 0.6% | 0.3% | 0.1% | 0.0% | 0.2% | 0.0% | 19.2% | 5.9% | 0.3% | 43.6% |
| 1979-1984 | 2630 |  | 17.9% | 0.5% | 0.3% | 7.6% | 0.0% | 7.0% | 0.1% | 0.2% | 0.2% | 1.9% | 2.5% | 0.1% | 0.6% | 0.6% | 0.1% | 0.0% | 0.0% | 0.3% | 0.0% | 10.0% | 0.3% | 0.4% | 49.4% |
| 1985-1995 | 1604 |  | 11.6% | 1.2% | 0.7% | 8.1% | 0.2% | 10.0% | 0.2% | 0.0% | 0.0% | 0.5% | 1.1% | 0.0% | 0.6% | 0.4% | 0.4% | 0.1% | 0.0% | 0.3% | 0.0% | 26.4% | 3.6% | 0.2% | 34.5% |
| 1996-1998 | 866 |  | 9.5% | 1.7% | 2.0% | 3.0% | 0.1% | 0.5% | 0.0% | 0.0% | 0.1% | 0.2% | 0.1% | 0.2% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.1% | 0.0% | 19.4% | 8.1% | 0.0% | 54.4% |
| 1999-2013 | 1997 |  | 13.1% | 0.7% | 1.4% | 4.2% | 1.5% | 1.4% | 1.5% | 0.0% | 0.3% | 0.0% | 0.1% | 0.3% | 1.0% | 0.8% | 0.2% | 0.1% | 0.0% | 0.1% | 0.0% | 17.4% | 9.6% | 0.3% | 45.9% |

*Appendix C48. Percent distribution of University Of Washington Accelerated total fishing mortalities among fisheries and escapement.*

| Catch | Estimated | | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # of | Ages | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | 4296 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.7% | 0.1% | 1.6% | 4.2% | 0.3% | 3.8% | 0.0% | 1.8% | 0.5% | 0.0% | 0.0% | 0.0% | 42.1% | 0.0% | 7.1% | 0.0% | 0.0% | 24.0% |
| 1980 | 5890 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 7.6% | 0.1% | 0.3% | 4.2% | 0.2% | 1.2% | 0.0% | 1.5% | 0.0% | 0.0% | 0.0% | 0.0% | 55.1% | 0.0% | 13.1% | 0.2% | 0.0% | 16.3% |
| 1981 | 4296 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 10.0% | 0.1% | 0.5% | 4.4% | 0.0% | 3.5% | 0.0% | 2.3% | 0.3% | 0.0% | 0.0% | 0.0% | 51.1% | 0.0% | 11.2% | 0.0% | 0.0% | 16.0% |
| 1982 | 3804 | 2,3,4,5 | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 16.9% | 0.2% | 0.3% | 3.7% | 0.3% | 0.9% | 0.0% | 2.5% | 0.4% | 0.1% | 0.0% | 0.0% | 32.2% | 0.0% | 14.5% | 0.0% | 0.0% | 27.9% |
| 1983 | 3986 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 9.4% | 0.1% | 0.6% | 3.1% | 0.9% | 1.3% | 0.0% | 1.2% | 0.2% | 0.0% | 0.0% | 0.0% | 38.6% | 0.0% | 25.0% | 0.0% | 0.2% | 19.5% |
| 1984 | 2063 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 17.9% | 0.2% | 0.4% | 4.0% | 0.5% | 0.9% | 0.0% | 1.6% | 0.0% | 0.1% | 0.0% | 0.0% | 30.5% | 0.0% | 23.1% | 0.2% | 0.0% | 20.6% |
| 1985 | 888 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14.0% | 1.2% | 0.0% | 5.0% | 0.0% | 4.7% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 29.6% | 0.0% | 15.9% | 0.0% | 0.1% | 27.5% |
| 1986 | 960 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.4% | 0.9% | 0.0% | 4.1% | 0.0% | 7.3% | 0.0% | 1.6% | 0.0% | 0.0% | 0.0% | 0.0% | 23.8% | 0.0% | 26.5% | 0.0% | 0.1% | 17.4% |
| 1987 | 1036 | 3,4,5 | 0.5% | 0.0% | 0.0% | 0.1% | 0.0% | 11.5% | 1.4% | 1.4% | 4.6% | 0.4% | 0.0% | 0.0% | 4.1% | 0.2% | 0.3% | 0.0% | 0.0% | 15.0% | 0.0% | 47.2% | 0.0% | 0.1% | 13.4% |
| 1988 | 618 | 4,5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | 44 | 5 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1998 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1999 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2000 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2001 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2002 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2004 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2005 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2006 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2007 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2008 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2009 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2010 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2011 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2012 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 3024 | | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 13.4% | 0.5% | 0.6% | 4.1% | 0.3% | 2.6% | 0.0% | 2.1% | 0.2% | 0.1% | 0.0% | 0.0% | 35.3% | 0.0% | 20.4% | 0.0% | 0.1% | 20.3% |
| 1979-1984 | 4056 | | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 12.8% | 0.1% | 0.6% | 3.9% | 0.4% | 1.9% | 0.0% | 1.8% | 0.2% | 0.0% | 0.0% | 0.0% | 41.6% | 0.0% | 15.7% | 0.1% | 0.0% | 20.7% |
| 1985-1995 | 961 | | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 14.6% | 1.2% | 0.5% | 4.6% | 0.1% | 4.0% | 0.0% | 2.5% | 0.1% | 0.1% | 0.0% | 0.0% | 22.8% | 0.0% | 29.8% | 0.0% | 0.1% | 19.4% |
| 1996-1998 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1999-2013 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |

*Appendix C49. Percent distribution of White River Spring Yearling total fishing mortalities among fisheries and escapement.*

| Catch | Estimated | Ages | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # of | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | |
| Year | CWTs | Present | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | Esc. |
| 1979 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1981 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1982 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1983 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1984 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1985 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1986 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1987 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1988 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1989 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1991 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1992 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1993 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1994 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1996 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1997 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1998 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1999 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2000 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2001 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2002 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2003 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2004 | 173 | 2 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2005 | 1039 | 2,3 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2006 | 1043 | 2,3,4 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.7% | 0.1% | 0.0% | 0.0% | 0.0% | 17.5% | 0.0% | 0.2% | 0.0% | 1.7% | 75.7% |
| 2007 | 773 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.5% | 0.0% | 0.0% | 0.0% | 22.5% | 0.0% | 0.0% | 0.0% | 2.6% | 72.8% |
| 2008 | 197 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.6% | 0.0% | 0.5% | 0.0% | 6.6% | 84.8% |
| 2009 | 209 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 13.9% | 0.0% | 0.0% | 0.0% | 3.3% | 82.8% |
| 2010 | 212 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.9% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.4% | 0.0% | 0.0% | 0.0% | 7.5% | 88.2% |
| 2011 | 216 | 2,3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.0% | 94.0% |
| 2012 | 200 | 3,4,5 | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.0% | 0.0% | 0.0% | 0.0% | 16.0% | 74.0% |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1979-2013 | 407 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.1% | 0.0% | 0.0% | 0.0% | 9.7% | 0.0% | 0.1% | 0.0% | 6.3% | 81.8% |
| 1979-1984 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1985-1995 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1996-1998 | 0 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| 1999-2013 | 407 | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.1% | 0.0% | 0.0% | 0.0% | 9.7% | 0.0% | 0.1% | 0.0% | 6.3% | 81.8% |

*Appendix C50. Percent distribution of Willamette Spring (Willamette River Hatchery) total fishing mortalities among fisheries and escapement.*

| Catch Year | Estimated # of CWTs | Ages Present | AABM | | | | | | | ISBM | | | | | | | | | | | | | | | | | | Esc. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SEAK | | | NBC | | WCVI | | Geo St | | Cent. | Canada | NBC | N Falcon | | S Falcon | | Pgt Snd | | Terminal | | | | | | | |
| | | | Troll | Net | Sport | Troll | Sport | Troll | Sport | Troll | Sport | Troll | Net | Sport | Troll | Sport | Troll | Sport | Net | Sport | Troll | Net | Sport | Strays | | | | |
| 1979 | 2086 | 3,4 | Failed | Criteria | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | 5864 | 3,4,5 | 4.4% | 0.5% | 0.2% | 5.9% | 0.0% | 2.8% | 0.0% | 0.0% | 0.0% | 0.2% | 0.4% | 0.1% | 0.5% | 0.5% | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.4% | 8.1% | 0.0% | 76.0% | | | |
| 1981 | 8171 | 3,4,5,6 | 5.3% | 0.3% | 0.1% | 6.1% | 0.0% | 1.4% | 0.0% | 0.0% | 0.0% | 0.4% | 0.1% | 0.0% | 0.4% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.6% | 10.8% | 0.0% | 73.3% | | | |
| 1982 | 3729 | 3,4,5,6 | 5.3% | 0.7% | 0.1% | 5.6% | 0.0% | 3.8% | 0.0% | 0.0% | 0.0% | 0.1% | 0.2% | 0.1% | 1.0% | 1.4% | 0.1% | 0.0% | 0.1% | 0.2% | 0.0% | 7.3% | 25.4% | 0.0% | 48.5% | | | |
| 1983 | 2610 | 3,4,5,6 | 16.4% | 0.1% | 0.0% | 10.5% | 0.0% | 1.6% | 0.0% | 0.3% | 0.4% | 0.2% | 0.0% | 0.0% | 1.3% | 0.3% | 0.6% | 0.0% | 0.0% | 0.5% | 0.0% | 6.4% | 22.0% | 0.0% | 39.4% | | | |
| 1984 | 4007 | 3,4,5,6 | 4.5% | 0.2% | 0.3% | 2.1% | 0.1% | 1.8% | 0.0% | 0.0% | 0.1% | 0.1% | 0.1% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 6.7% | 25.0% | 0.0% | 57.6% | | | |
| 1985 | 2563 | 3,4,5,6 | 7.1% | 0.2% | 0.0% | 0.5% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 18.4% | 19.7% | 0.0% | 53.2% | | | |
| 1986 | 632 | 3,4,5,6 | 3.3% | 0.3% | 0.0% | 6.2% | 0.0% | 4.4% | 0.5% | 0.0% | 0.0% | 0.5% | 1.9% | 0.0% | 0.0% | 0.2% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 10.3% | 17.7% | 0.0% | 54.4% | | | |
| 1987 | 689 | 3,4,5,6 | 15.8% | 0.0% | 0.6% | 11.9% | 0.0% | 1.3% | 0.9% | 0.0% | 0.0% | 1.0% | 0.7% | 0.0% | 1.7% | 0.0% | 1.2% | 0.0% | 0.0% | 0.6% | 0.0% | 5.1% | 26.1% | 0.0% | 33.1% | | | |
| 1988 | 2065 | 3,4,5,6 | 10.6% | 0.3% | 0.5% | 6.5% | 0.0% | 3.4% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 1.7% | 0.0% | 0.4% | 0.1% | 0.0% | 0.0% | 0.0% | 7.2% | 29.2% | 0.1% | 39.2% | | | |
| 1989 | 2722 | 3,4,5,6 | 5.1% | 0.0% | 0.2% | 1.8% | 0.0% | 1.5% | 0.4% | 0.0% | 0.6% | 0.0% | 0.2% | 0.0% | 1.6% | 0.1% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 12.7% | 20.9% | 0.0% | 54.8% | | | |
| 1990 | 2712 | 3,4,5,6 | 8.4% | 0.6% | 0.2% | 1.6% | 0.0% | 2.3% | 0.6% | 0.0% | 0.0% | 0.2% | 0.4% | 0.3% | 1.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 16.6% | 27.9% | 0.0% | 39.5% | | | |
| 1991 | 2949 | 3,4,5,6 | 3.7% | 1.5% | 0.6% | 1.7% | 0.0% | 0.3% | 0.1% | 0.0% | 0.2% | 0.0% | 0.1% | 0.0% | 0.5% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6.1% | 43.8% | 0.0% | 41.1% | | | |
| 1992 | 2703 | 3,4,5,6 | 6.2% | 4.6% | 0.2% | 1.4% | 0.0% | 2.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 2.3% | 0.2% | 0.0% | 0.1% | 0.0% | 0.5% | 0.0% | 5.7% | 30.2% | 0.0% | 46.0% | | | |
| 1993 | 5203 | 3,4,5,6 | 11.0% | 0.0% | 0.0% | 1.3% | 0.1% | 1.4% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.5% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 43.4% | 0.0% | 40.1% | | | |
| 1994 | 4953 | 3,4,5,6 | 5.4% | 0.7% | 0.7% | 0.7% | 0.1% | 0.8% | 0.0% | 0.0% | 0.0% | 0.2% | 0.1% | 0.0% | 0.1% | 0.0% | 0.1% | 0.1% | 0.0% | 0.1% | 0.0% | 5.0% | 39.4% | 0.5% | 46.0% | | | |
| 1995 | 4371 | 3,4,5,6 | 4.5% | 0.1% | 0.3% | 1.2% | 0.0% | 0.5% | 0.1% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.3% | 44.4% | 0.1% | 47.9% | | | |
| 1996 | 3679 | 3,4,5,6 | 2.1% | 0.0% | 0.0% | 0.2% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 0.8% | 34.8% | 0.4% | 61.3% | | | |
| 1997 | 2222 | 3,4,5,6 | 4.4% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 16.0% | 0.1% | 78.0% | | | |
| 1998 | 1575 | 3,4,5,6 | 5.1% | 0.0% | 0.3% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.4% | 17.3% | 0.1% | 76.3% | | | |
| 1999 | 1802 | 3,4,5,6 | 7.4% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.8% | 15.0% | 0.2% | 75.0% | | | |
| 2000 | 6810 | 3,4,5,6 | 11.5% | 0.1% | 0.8% | 0.1% | 0.4% | 0.4% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.2% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 2.4% | 30.2% | 0.0% | 53.4% | | | |
| 2001 | 35531 | 3,4,5,6 | 1.5% | 0.0% | 0.1% | 0.1% | 0.1% | 0.4% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 3.7% | 25.8% | 0.0% | 67.7% | | | |
| 2002 | 20239 | 3,4,5,6 | 2.1% | 0.1% | 0.1% | 1.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 15.4% | 22.5% | 0.0% | 57.1% | | | |
| 2003 | 7244 | 3,4,5,6 | 5.2% | 0.0% | 0.1% | 0.4% | 0.1% | 2.2% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 1.4% | 20.4% | 0.1% | 69.5% | | | |
| 2004 | 7328 | 3,4,5,6 | 3.5% | 0.4% | 0.1% | 0.7% | 0.0% | 5.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.9% | 0.0% | 0.0% | 0.0% | 0.0% | 6.1% | 24.5% | 0.0% | 57.7% | | | |
| 2005 | 3222 | 3,4,5,6 | 2.8% | 0.0% | 0.1% | 0.2% | 0.2% | 5.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.1% | 0.3% | 0.0% | 0.0% | 0.1% | 0.0% | 4.9% | 21.2% | 0.0% | 64.0% | | | |
| 2006 | 2027 | 3,4,5,6 | 3.7% | 0.0% | 0.0% | 0.4% | 0.6% | 4.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 7.8% | 27.1% | 0.0% | 54.5% | | | |
| 2007 | 1596 | 3,4,5,6 | 4.8% | 0.1% | 0.0% | 0.0% | 0.0% | 1.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5.0% | 19.2% | 0.3% | 68.7% | | | |
| 2008 | 2246 | 3,4,5,6 | 1.8% | 0.1% | 0.0% | 0.5% | 0.0% | 0.9% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 20.5% | 13.0% | 0.3% | 62.4% | | | |
| 2009 | 4111 | 3,4,5,6 | 3.3% | 0.0% | 0.0% | 0.2% | 0.1% | 0.7% | 2.1% | 0.0% | 0.8% | 0.0% | 0.0% | 0.1% | 0.3% | 0.1% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 9.1% | 23.0% | 0.0% | 59.7% | | | |
| 2010 | 11845 | 3,4,5,6 | 2.9% | 0.0% | 0.1% | 0.5% | 0.2% | 0.5% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 1.8% | 0.2% | 0.1% | 0.0% | 0.0% | 0.1% | 0.0% | 3.9% | 34.6% | 0.1% | 54.9% | | | |
| 2011 | 7992 | 3,4,5,6 | 4.0% | 0.0% | 0.2% | 0.7% | 0.2% | 1.1% | 0.1% | 0.0% | 0.1% | 0.0% | 0.0% | 0.1% | 0.9% | 0.2% | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 5.3% | 42.7% | 0.2% | 43.9% | | | |
| 2012 | 6007 | 3,4,5,6 | 6.4% | 0.0% | 0.2% | 0.3% | 0.1% | 3.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.4% | 0.7% | 0.4% | 0.0% | 0.0% | 0.4% | 0.0% | 5.2% | 37.7% | 0.6% | 43.3% | | | |
| 2013 | No Data | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| 1979-2013 | 5498 | | 5.7% | 0.3% | 0.2% | 2.1% | 0.1% | 1.7% | 0.2% | 0.0% | 0.1% | 0.1% | 0.2% | 0.0% | 0.7% | 0.2% | 0.2% | 0.0% | 0.0% | 0.1% | 0.0% | 6.2% | 26.0% | 0.1% | 55.7% | | | |
| 1979-1984 | 4876 | | 7.2% | 0.4% | 0.2% | 6.0% | 0.0% | 2.3% | 0.0% | 0.1% | 0.1% | 0.2% | 0.2% | 0.0% | 0.8% | 0.5% | 0.2% | 0.0% | 0.0% | 0.2% | 0.0% | 4.5% | 18.3% | 0.0% | 59.0% | | | |
| 1985-1995 | 2869 | | 7.4% | 0.8% | 0.3% | 3.2% | 0.0% | 1.7% | 0.3% | 0.0% | 0.1% | 0.3% | 0.4% | 0.0% | 1.0% | 0.1% | 0.2% | 0.1% | 0.0% | 0.1% | 0.0% | 8.0% | 31.2% | 0.1% | 45.0% | | | |
| 1996-1998 | 2492 | | 3.9% | 0.0% | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.1% | 0.0% | 0.0% | 0.2% | 0.0% | 0.7% | 22.7% | 0.2% | 71.9% | | | |
| 1999-2013 | 8429 | | 4.3% | 0.1% | 0.2% | 0.4% | 0.1% | 1.9% | 0.3% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.6% | 0.1% | 0.2% | 0.0% | 0.0% | 0.1% | 0.0% | 6.6% | 25.5% | 0.1% | 59.4% | | | |

# APPENDIX D: MODEL ESTIMATES OF THE STOCK COMPOSITION OF THE AABM AND 3 ISBM OCEAN FISHERIES FOR 2013 AND THE AVERAGE, 1985–2012

This appendix shows the model estimates of the stock composition of the catch for the 3 AABM fisheries (Appendices D1, D2 and D4), and 3 ISBM ocean fisheries (Appendices D3, D5 and D6). These estimates are based on the summation of the contribution of the 30 model stocks for each fishery, expressed as a percentage of the total catch.

The estimated stock composition may not reflect the true stock composition in a given year for several reasons:

1. The yearly catch estimates by stock are influenced by the base period stock composition in a fishery which may not reflect the current stock composition in the fishery, amongst the 30 model stocks.
2. The distribution of certain stocks may have changed over time.
3. The 30 model stocks do not represent all production present in a fishery.

For example, in the SEAK fishery a substantial component (over 20%) of the catch is comprised of Alaska hatchery fish, most of which do not count as treaty catch and are not included in Appendix D1. Also, in the sport fishery portion of the present NBC AABM fishery, the base period data used is from fisheries which were located near shore and do not represent the current stock composition of the sport fishery which is located offshore.

Hence, these tables do not necessarily portray the true stock composition of the total catch of the fisheries in Appendices D1 to D6. There are genetic estimates for most of these fisheries in selected years which can provide more accurate accounting of contributions by stocks or stock groups.

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*Appendix D1. Southeast Alaska all gear.*

| FISHERY | SOUTHEAST ALASKA ALL GEAR | | | | |
|---|---|---|---|---|---|
| | 2013 | Average (1985–2012) | | | |
| Model Stock | % of Fishery Catch | % of Fishery Catch | % of Stock Catch | % of Stock Total Return | Associated Escapement Indicator Stocks[1] |
| North/Central BC | 10.69% | 17.80% | 21.51% | 10.56% | Yakoun<br>Nass<br>Skeena<br>Area 6 Index<br>Area 8 Index<br>Rivers Inlet<br>Smith Inlet |
| Columbia Upriver Bright | 30.37% | 15.58% | 24.02% | 11.84% | Columbia Upriver Bright |
| WCVI Hatchery | 11.68% | 16.42% | 51.16% | 17.59% | NA |
| Oregon Coastal North Migrating | 7.87% | 12.49% | 30.71% | 13.22% | Oregon Coastal |
| Fraser Early | 4.07% | 4.54% | 26.04% | 5.47% | Upper Fraser<br>Middle Fraser<br>Thompson |
| Mid-Columbia Brights | 14.07% | 5.57% | 32.47% | 12.55% | Not Represented |
| Upper Georgia Strait | 5.73% | 5.43% | 36.46% | 21.79% | Upper Georgia Strait |
| Alaska South SE | 1.20% | 4.32% | 96.91% | 37.17% | King Salmon<br>Andrew Creek<br>Blossom<br>Keta<br>Unuk<br>Chickamin |
| Washington Coastal Wild | 2.19% | 3.04% | 18.12% | 9.59% | Grays Harbor Fall<br>Quillayute Fall<br>Hoh Fall<br>Queets Fall |
| WCVI Wild | 1.22% | 3.25% | 52.28% | 17.75% | WCVI |
| Columbia Upriver Summer | 4.79% | 3.14% | 32.48% | 13.60% | Columbia Upriver Summer |
| WA Coastal Hatchery | 2.00% | 2.52% | 17.05% | 8.96% | NA |
| Willamette River Hatchery | 1.44% | 2.19% | 11.48% | 4.82% | NA |
| Fall Cowlitz Hatchery | 0.25% | 1.23% | 6.51% | 2.54% | NA |
| Lewis River Wild | 0.91% | 0.85% | 18.18% | 7.84% | Lewis River |
| Lower GS Hatchery | 0.11% | 0.36% | 3.74% | 1.85% | NA |
| PS Hatchery Fingerling | 0.25% | 0.25% | 0.59% | 0.32% | NA |
| Lower Georgia Strait | 0.12% | 0.21% | 4.05% | 2.11% | Lower Georgia Strait |
| Snake River Fall | 0.64% | 0.16% | 8.25% | 4.90% | Not Represented |
| Fraser Late | 0.05% | 0.16% | 0.31% | 0.11% | Harrison |
| Spring Cowlitz Hatchery | 0.06% | 0.11% | 2.27% | 1.17% | NA |
| Skagit Summer/Fall | 0.03% | 0.11% | 4.49% | 1.24% | Skagit Summer/Fall |
| Stillaguamish Summer/Fall | 0.08% | 0.07% | 18.88% | 7.04% | Stillaguamish |
| PS Yearling | 0.08% | 0.06% | 0.61% | 0.39% | NA |
| Nooksack Fall | 0.04% | 0.05% | 0.22% | 0.16% | NA |
| Puget Sound Natural | 0.02% | 0.05% | 0.71% | 0.32% | Green |
| Snohomish Summer/Fall | 0.03% | 0.05% | 3.28% | 1.24% | Snohomish |
| Spring Creek Hatchery | 0.00% | 0.00% | 0.00% | 0.00% | NA |
| Lower Bonneville Hatchery | 0.00% | 0.00% | 0.00% | 0.00% | NA |
| Nooksack Spring | 0.00% | 0.00% | 0.00% | 0.00% | Not Represented |

[1] NA = a hatchery stock; Not represented = a wild stock without an escapement indicator.

*Appendix D2. North BC troll.*

| FISHERY | NORTH TROLL | | | | |
|---|---|---|---|---|---|
| | 2013 | Average (1985–2012) | | | |
| Model Stock | % of Fishery Catch | % of Fishery Catch | % of Stock Catch | % of Stock Tot. Ret. | Associated Escapement Indicator Stocks |
| North/Central BC | 4.89% | 11.05% | 7.09% | 3.48% | Yakoun<br>Nass<br>Skeena<br>Area 6 Index<br>Area 8 Index<br>Rivers Inlet<br>Smith Inlet |
| Oregon Coastal North Migrating | 17.50% | 25.86% | 30.37% | 13.92% | Oregon Coastal |
| Columbia Upriver Bright | 44.40% | 15.62% | 11.89% | 6.17% | Columbia Upriver Bright |
| WCVI Hatchery | 2.96% | 7.79% | 10.65% | 4.21% | NA |
| Upper Georgia Strait | 3.56% | 3.92% | 12.43% | 7.75% | Upper Georgia Strait |
| Fraser Early | 4.22% | 6.57% | 16.64% | 4.05% | Upper Fraser<br>Middle Fraser<br>Thompson |
| Willamette River Hatchery | 2.64% | 5.69% | 13.34% | 6.27% | NA |
| Washington Coastal Wild | 2.46% | 4.80% | 13.37% | 7.62% | Grays Harbor Fall<br>Quillayute Fall<br>Hoh Fall<br>Queets Fall |
| Columbia Upriver Summer | 2.70% | 2.40% | 11.40% | 5.07% | Columbia Upriver Summer |
| WA Coastal Hatchery | 2.21% | 4.00% | 12.76% | 7.15% | NA |
| Mid-Columbia Brights | 8.87% | 3.93% | 10.87% | 4.50% | Not Represented |
| WCVI Wild | 0.33% | 1.78% | 10.70% | 4.21% | WCVI |
| Lower GS Hatchery | 0.13% | 0.81% | 3.20% | 1.70% | NA |
| Fall Cowlitz Hatchery | 0.58% | 1.01% | 2.16% | 0.94% | NA |
| Fraser Late | 0.24% | 0.65% | 0.45% | 0.20% | Harrison |
| Lower Georgia Strait | 0.19% | 0.45% | 2.87% | 1.64% | Lower Georgia Strait |
| Nooksack Fall | 0.07% | 0.26% | 0.27% | 0.20% | NA |
| Skagit Summer/Fall | 0.24% | 0.41% | 5.62% | 1.76% | Skagit Summer/Fall |
| PS Hatchery Fingerling | 0.24% | 0.40% | 0.32% | 0.19% | NA |
| Lewis River Wild | 0.49% | 0.55% | 4.04% | 2.01% | Lewis River |
| Spring Cowlitz Hatchery | 0.10% | 0.35% | 2.17% | 1.24% | NA |
| PS Yearling | 0.17% | 0.27% | 0.71% | 0.48% | NA |
| Snohomish Summer/Fall | 0.05% | 0.25% | 4.03% | 1.76% | Snohomish |
| Alaska South SE | 0.03% | 0.28% | 1.97% | 0.74% | King Salmon<br>Andrew Creek<br>Blossom<br>Keta<br>Unuk<br>Chickamin |
| Snake River Fall | 0.69% | 0.34% | 5.40% | 3.43% | Not Represented |
| Puget Sound Natural | 0.02% | 0.17% | 0.35% | 0.18% | Green |
| Stillaguamish Summer/Fall | 0.01% | 0.13% | 2.16% | 0.90% | Stillaguamish |
| Spring Creek Hatchery | 0.02% | 0.14% | 0.05% | 0.04% | NA |
| Nooksack Spring | 0.01% | 0.12% | 1.59% | 0.49% | Not Represented |
| Lower Bonneville Hatchery | 0.00% | 0.00% | 0.00% | 0.00% | NA |

[1] NA = a hatchery stock; Not represented = a wild stock without an escapement indicator.

*Appendix D3. Central BC troll.*

| FISHERY | CENTRAL TROLL | | | | |
|---|---|---|---|---|---|
| | 2013 | Average (1985–2012) | | | |
| Model Stock | % of Fishery Catch | % of Fishery Catch | % of Stock Catch | % of Stock Tot. Ret. | Associated Escapement Indicator Stocks |
| Fraser Late | 0.00% | 15.44% | 1.52% | 0.83% | Harrison |
| WCVI Hatchery | 0.00% | 13.15% | 2.56% | 1.08% | NA |
| Columbia Upriver Bright | 0.00% | 6.20% | 0.65% | 0.38% | Columbia Upriver Bright |
| North/Central BC | 0.00% | 5.30% | 0.71% | 0.30% | Yakoun<br>Nass<br>Skeena<br>Area 6 Index<br>Area 8 Index<br>Rivers Inlet<br>Smith Inlet |
| Upper Georgia Strait | 0.00% | 4.55% | 2.40% | 1.54% | Upper Georgia Strait |
| WCVI Wild | 0.00% | 2.94% | 2.52% | 1.07% | WCVI |
| Columbia Upriver Summer | 0.00% | 2.70% | 2.60% | 1.21% | Columbia Upriver Summer |
| Washington Coastal Wild | 0.00% | 2.52% | 0.83% | 0.54% | Grays Harbor Fall<br>Quillayute Fall<br>Hoh Fall<br>Queets Fall |
| Fraser Early | 0.00% | 2.49% | 0.75% | 0.25% | Upper Fraser<br>Middle Fraser<br>Thompson |
| Lower GS Hatchery | 0.00% | 2.19% | 1.01% | 0.69% | NA |
| WA Coastal Hatchery | 0.00% | 2.01% | 0.78% | 0.50% | NA |
| Mid-Columbia Brights | 0.00% | 1.99% | 0.78% | 0.39% | Not Represented |
| Oregon Coastal North Migrating | 0.00% | 1.86% | 0.27% | 0.14% | Oregon Coastal |
| Lower Bonneville Hatchery | 0.00% | 1.68% | 0.69% | 0.34% | NA |
| Lower Georgia Strait | 0.00% | 1.33% | 0.96% | 0.68% | Lower Georgia Strait |
| PS Hatchery Fingerling | 0.00% | 1.33% | 0.19% | 0.12% | NA |
| Nooksack Fall | 0.00% | 1.28% | 0.26% | 0.21% | NA |
| Skagit Summer/Fall | 0.00% | 0.90% | 1.56% | 0.65% | Skagit Summer/Fall |
| Lewis River Wild | 0.00% | 0.66% | 0.44% | 0.24% | Lewis River |
| Snohomish Summer/Fall | 0.00% | 0.56% | 1.07% | 0.67% | Snohomish |
| PS Yearling | 0.00% | 0.56% | 0.28% | 0.22% | NA |
| Spring Creek Hatchery | 0.00% | 0.52% | 0.07% | 0.06% | NA |
| Puget Sound Natural | 0.00% | 0.51% | 0.21% | 0.13% | Green |
| Willamette River Hatchery | 0.00% | 0.48% | 0.08% | 0.05% | NA |
| Spring Cowlitz Hatchery | 0.00% | 0.36% | 0.14% | 0.10% | NA |
| Fall Cowlitz Hatchery | 0.00% | 0.35% | 0.04% | 0.02% | NA |
| Stillaguamish Summer/Fall | 0.00% | 0.32% | 1.39% | 0.68% | Stillaguamish |
| Snake River Fall | 0.00% | 0.30% | 0.52% | 0.38% | Not Represented |
| Nooksack Spring | 0.00% | 0.27% | 0.31% | 0.14% | Not Represented |
| Alaska South SE | 0.00% | 0.27% | 0.01% | 0.01% | King Salmon<br>Andrew Creek<br>Blossom<br>Keta<br>Unuk<br>Chickamin |

[1] NA = a hatchery stock; Not represented = a wild stock without an escapement indicator.

*Appendix D4. WCVI troll and outside sport.*

| **FISHERY** | **WCVI TROLL AND OUTSIDE SPORT** | | | | |
|---|---|---|---|---|---|
| | **2013** | **Average (1985-2012)** | | | |
| **Model Stock** | **% of Fishery Catch** | **% of Fishery Catch** | **% of Stock Catch** | **% of Stock Tot. Ret.** | **Associated Escapement Indicator Stocks** |
| Fraser Late | 19.94% | 23.81% | 22.98% | 10.78% | Harrison |
| PS Hatchery Fingerling | 8.63% | 11.13% | 14.69% | 8.96% | NA |
| Columbia Upriver Bright | 22.97% | 8.83% | 8.38% | 4.49% | Columbia Upriver Bright |
| Spring Creek Hatchery | 6.81% | 6.94% | 12.99% | 10.21% | NA |
| Fall Cowlitz Hatchery | 4.26% | 6.85% | 21.43% | 9.90% | NA |
| Lower Bonneville Hatchery | 1.26% | 5.20% | 29.76% | 13.55% | NA |
| Oregon Coastal North Migrating | 2.42% | 4.61% | 7.09% | 3.35% | Oregon Coastal |
| Nooksack Fall | 2.61% | 4.38% | 10.33% | 7.88% | NA |
| WCVI Hatchery | 0.00% | 3.75% | 6.07% | 2.79% | NA |
| Mid-Columbia Brights | 12.28% | 3.54% | 12.35% | 5.39% | Not Represented |
| Columbia Upriver Summer | 3.30% | 2.99% | 20.40% | 9.23% | Columbia Upriver Summer |
| Washington Coastal Wild | 2.66% | 2.48% | 9.13% | 5.06% | Grays Harbor Fall<br>Quillayute Fall<br>Hoh Fall<br>Queets Fall |
| Puget Sound Natural | 0.60% | 2.25% | 16.83% | 9.03% | Green |
| WA Coastal Hatchery | 2.25% | 2.17% | 9.06% | 4.86% | NA |
| Willamette River Hatchery | 0.97% | 2.03% | 6.19% | 2.94% | NA |
| PS Yearling | 1.73% | 1.66% | 9.56% | 6.79% | NA |
| Fraser Early | 1.51% | 1.52% | 4.91% | 1.13% | Upper Fraser<br>Middle Fraser<br>Thompson |
| WCVI Wild | 0.00% | 0.91% | 6.04% | 2.78% | WCVI |
| Skagit Summer/Fall | 0.71% | 0.91% | 20.04% | 6.69% | Skagit Summer/Fall |
| Lewis River Wild | 1.19% | 0.78% | 9.97% | 4.89% | Lewis River |
| Spring Cowlitz Hatchery | 0.30% | 0.66% | 7.11% | 4.49% | NA |
| Snake River Fall | 2.35% | 0.66% | 21.40% | 14.11% | Not Represented |
| North/Central BC | 0.40% | 0.51% | 0.39% | 0.19% | Yakoun<br>Nass<br>Skeena<br>Area 6 Index<br>Area 8 Index<br>Rivers Inlet<br>Smith Inlet |
| Lower GS Hatchery | 0.16% | 0.46% | 2.77% | 1.43% | NA |
| Snohomish Summer/Fall | 0.16% | 0.43% | 14.63% | 6.64% | Snohomish |
| Lower Georgia Strait | 0.28% | 0.24% | 2.71% | 1.51% | Lower Georgia Strait |
| Upper Georgia Strait | 0.15% | 0.13% | 0.53% | 0.33% | Upper Georgia Strait |
| Stillaguamish Summer/Fall | 0.06% | 0.10% | 15.12% | 6.37% | Stillaguamish |
| Nooksack Spring | 0.04% | 0.07% | 10.70% | 3.67% | Not Represented |
| Alaska South SE | 0.00% | 0.00% | 0.00% | 0.00% | King Salmon<br>Andrew Creek<br>Blossom<br>Keta<br>Unuk<br>Chickamin |

[1] NA = a hatchery stock; Not represented = a wild stock without an escapement indicator.

*Appendix D5. Strait of Georgia sport and troll.*

| FISHERY | STRAIT OF GEORGIA SPORT AND TROLL | | | | |
|---|---|---|---|---|---|
| | 2013 | Average (1985–2012) | | | |
| Model Stock | % of Fishery Catch | % of Fishery Catch | % of Stock Catch | % of Stock Tot. Ret. | Associated Escapement Indicator Stocks |
| Fraser Late | 33.98% | 46.07% | 37.22% | 18.23% | Harrison |
| Lower GS Hatchery | 3.22% | 9.47% | 42.60% | 24.43% | NA |
| Nooksack Fall | 9.81% | 9.14% | 17.74% | 13.30% | NA |
| PS Hatchery Fingerling | 10.06% | 6.81% | 7.49% | 4.50% | NA |
| Lower Georgia Strait | 6.19% | 5.46% | 43.31% | 26.23% | Lower Georgia Strait |
| Fraser Early | 5.70% | 4.38% | 10.95% | 2.59% | Upper Fraser<br>Middle Fraser<br>Thompson |
| PS Yearling | 8.75% | 4.50% | 19.52% | 13.68% | NA |
| Upper Georgia Strait | 4.97% | 3.26% | 10.38% | 6.28% | Upper Georgia Strait |
| Puget Sound Natural | 0.63% | 1.27% | 8.06% | 4.24% | Green |
| Skagit Summer/Fall | 1.78% | 1.26% | 23.26% | 7.69% | Skagit Summer/Fall |
| Columbia Upriver Bright | 4.93% | 1.20% | 0.90% | 0.47% | Columbia Upriver Bright |
| Washington Coastal Wild | 1.01% | 0.91% | 2.67% | 1.52% | Grays Harbor Fall<br>Quillayute Fall<br>Hoh Fall<br>Queets Fall |
| Spring Creek Hatchery | 1.74% | 0.95% | 1.41% | 1.10% | NA |
| WA Coastal Hatchery | 0.82% | 0.79% | 2.56% | 1.48% | NA |
| WCVI Hatchery | 0.84% | 0.81% | 1.30% | 0.44% | NA |
| Lower Bonneville Hatchery | 0.35% | 0.63% | 3.20% | 1.31% | NA |
| North/Central BC | 0.59% | 0.64% | 0.47% | 0.21% | Yakoun<br>Nass<br>Skeena<br>Area 6 Index<br>Area 8 Index<br>Rivers Inlet<br>Smith Inlet |
| Snohomish Summer/Fall | 0.40% | 0.57% | 15.57% | 7.53% | Snohomish |
| Nooksack Spring | 0.53% | 0.47% | 65.29% | 24.05% | Not Represented |
| Columbia Upriver Summer | 0.90% | 0.45% | 2.79% | 1.16% | Columbia Upriver Summer |
| Mid-Columbia Brights | 2.31% | 0.40% | 1.16% | 0.50% | Not Represented |
| Stillaguamish Summer/Fall | 0.21% | 0.18% | 21.31% | 8.94% | Stillaguamish |
| WCVI Wild | 0.10% | 0.15% | 1.31% | 0.44% | WCVI |
| Willamette River Hatchery | 0.11% | 0.13% | 0.33% | 0.16% | NA |
| Spring Cowlitz Hatchery | 0.04% | 0.04% | 0.42% | 0.25% | NA |
| Fall Cowlitz Hatchery | 0.00% | 0.01% | 0.03% | 0.02% | NA |
| Lewis River Wild | 0.00% | 0.01% | 0.14% | 0.08% | Lewis River |
| Snake River Fall | 0.03% | 0.00% | 0.11% | 0.07% | Not Represented |
| Oregon Coastal North Migrating | 0.00% | 0.00% | 0.00% | 0.00% | Oregon Coastal |
| Alaska South SE | 0.00% | 0.00% | 0.00% | 0.00% | King Salmon<br>Andrew Creek<br>Blossom<br>Keta<br>Unuk<br>Chickamin |

[1] NA = a hatchery stock; Not represented = a wild stock without an escapement indicator.

*Appendix D6. Washington/Oregon troll and sport.*

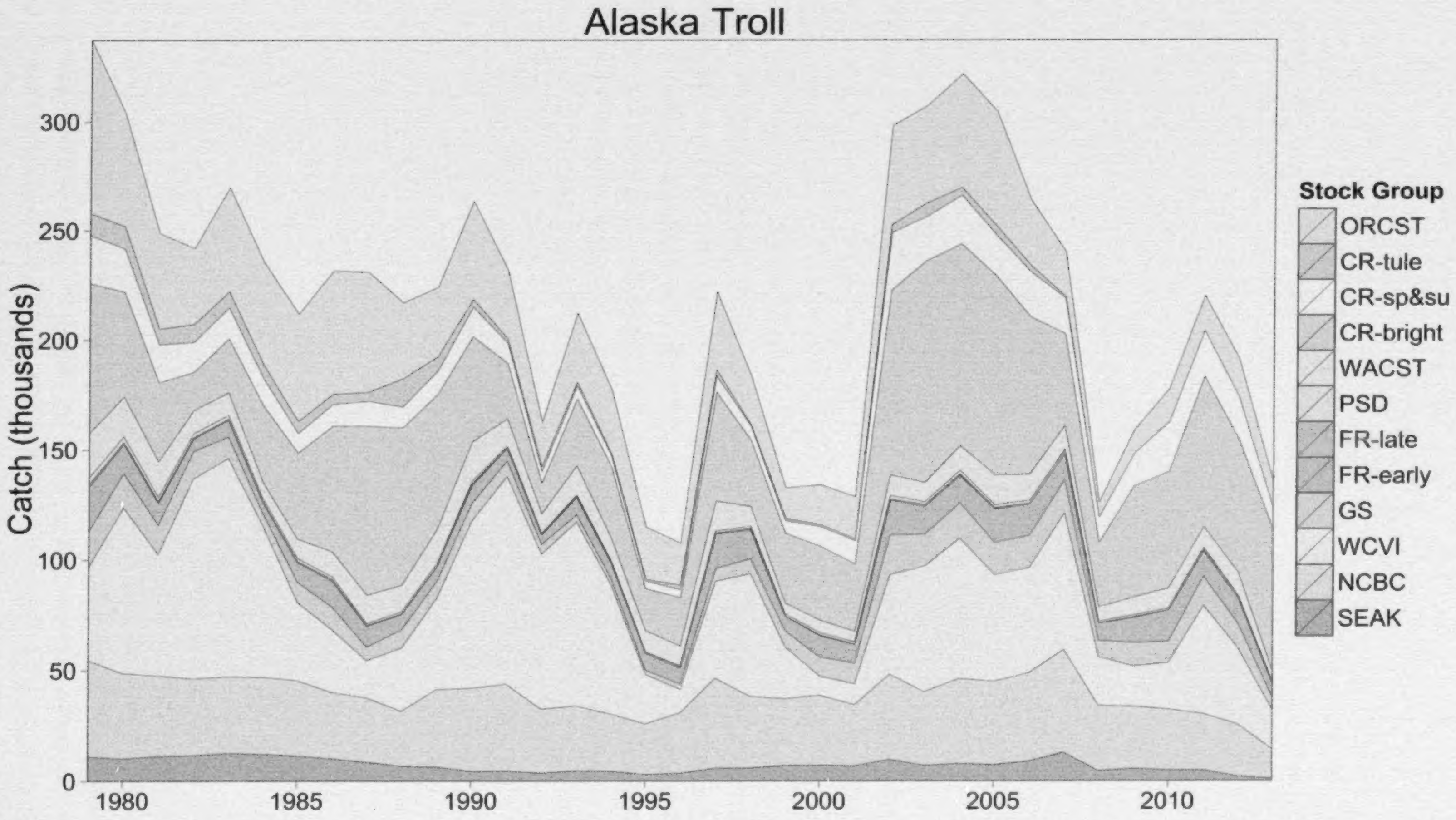
| FISHERY | WA/OR TROLL AND SPORT | | | | |
|---|---|---|---|---|---|
| | 2013 | Average (1985-2012) | | | |
| Model Stock | % of Fishery Catch | % of Fishery Catch | % of Stock Catch | % of Stock Tot. Ret. | Associated Escapement Indicator Stocks |
| Spring Creek Hatchery | 31.09% | 23.97% | 29.59% | 23.39% | NA |
| Fall Cowlitz Hatchery | 18.93% | 19.43% | 40.90% | 18.05% | NA |
| Fraser Late | 10.77% | 18.82% | 12.11% | 5.52% | Harrison |
| Lower Bonneville Hatchery | 2.90% | 10.11% | 40.81% | 17.32% | NA |
| Spring Cowlitz Hatchery | 2.27% | 4.46% | 34.55% | 19.81% | NA |
| PS Hatchery Fingerling | 3.45% | 4.41% | 3.74% | 2.19% | NA |
| Columbia Upriver Bright | 11.39% | 4.26% | 2.71% | 1.39% | Columbia Upriver Bright |
| Oregon Coastal North Migrating | 1.49% | 2.54% | 2.72% | 1.17% | Oregon Coastal |
| Willamette River Hatchery | 0.91% | 1.89% | 3.92% | 1.74% | NA |
| Nooksack Fall | 0.86% | 1.68% | 2.47% | 1.84% | NA |
| Mid-Columbia Brights | 5.35% | 1.46% | 3.43% | 1.41% | Not Represented |
| Lewis River Wild | 2.89% | 1.43% | 13.83% | 5.99% | Lewis River |
| Washington Coastal Wild | 0.74% | 1.13% | 2.44% | 1.33% | Grays Harbor Fall<br>Quillayute Fall<br>Hoh Fall<br>Queets Fall |
| WA Coastal Hatchery | 0.60% | 0.97% | 2.43% | 1.29% | NA |
| Snake River Fall | 4.68% | 1.13% | 22.39% | 14.06% | Not Represented |
| Puget Sound Natural | 0.24% | 0.90% | 4.39% | 2.18% | Green |
| Columbia Upriver Summer | 0.89% | 0.77% | 3.26% | 1.44% | Columbia Upriver Summer |
| PS Yearling | 0.32% | 0.29% | 1.08% | 0.73% | NA |
| Fraser Early | 0.15% | 0.20% | 0.52% | 0.11% | Upper Fraser<br>Middle Fraser<br>Thompson |
| Alaska South SE | 0.02% | 0.08% | 0.70% | 0.26% | King Salmon<br>Andrew Creek<br>Blossom<br>Keta<br>Unuk<br>Chickamin |
| Lower GS Hatchery | 0.01% | 0.03% | 0.15% | 0.08% | NA |
| WCVI Hatchery | 0.04% | 0.03% | 0.04% | 0.01% | NA |
| Lower Georgia Strait | 0.01% | 0.02% | 0.16% | 0.09% | Lower Georgia Strait |
| WCVI Wild | 0.00% | 0.01% | 0.04% | 0.01% | WCVI |
| Skagit Summer/Fall | 0.00% | 0.00% | 0.06% | 0.02% | Skagit Summer/Fall |
| Snohomish Summer/Fall | 0.00% | 0.00% | 0.05% | 0.02% | Snohomish |
| Upper Georgia Strait | 0.00% | 0.00% | 0.00% | 0.00% | Upper Georgia Strait |
| Stillaguamish Summer/Fall | 0.00% | 0.00% | 0.00% | 0.00% | Stillaguamish |
| North/Central BC | 0.00% | 0.00% | 0.00% | 0.00% | Yakoun<br>Nass<br>Skeena<br>Area 6 Index<br>Area 8 Index<br>Rivers Inlet<br>Smith Inlet |
| Nooksack Spring | 0.00% | 0.00% | 0.00% | 0.00% | Not Represented |

[1] NA = a hatchery stock; Not represented = a wild stock without an escapement indicator.

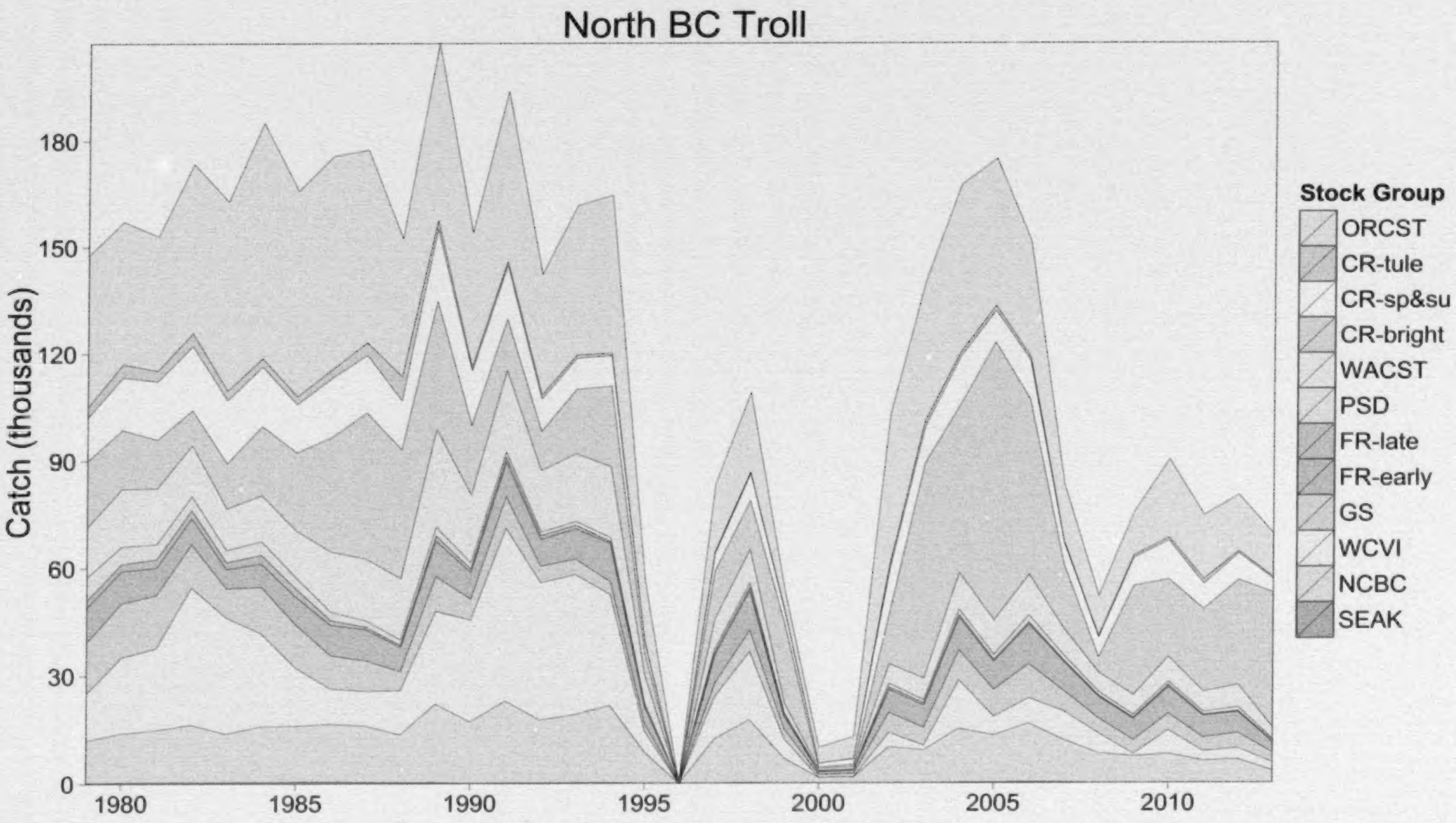
# APPENDIX E: FIGURES OF CHINOOK MODEL-GENERATED STOCK COMPOSITION OF ACTUAL LANDED CATCH FOR ALL (AABM AND ISBM) MODEL FISHERIES, 1979-2013

Stock abbreviations in each figure correspond to the following model stocks and aggregations.

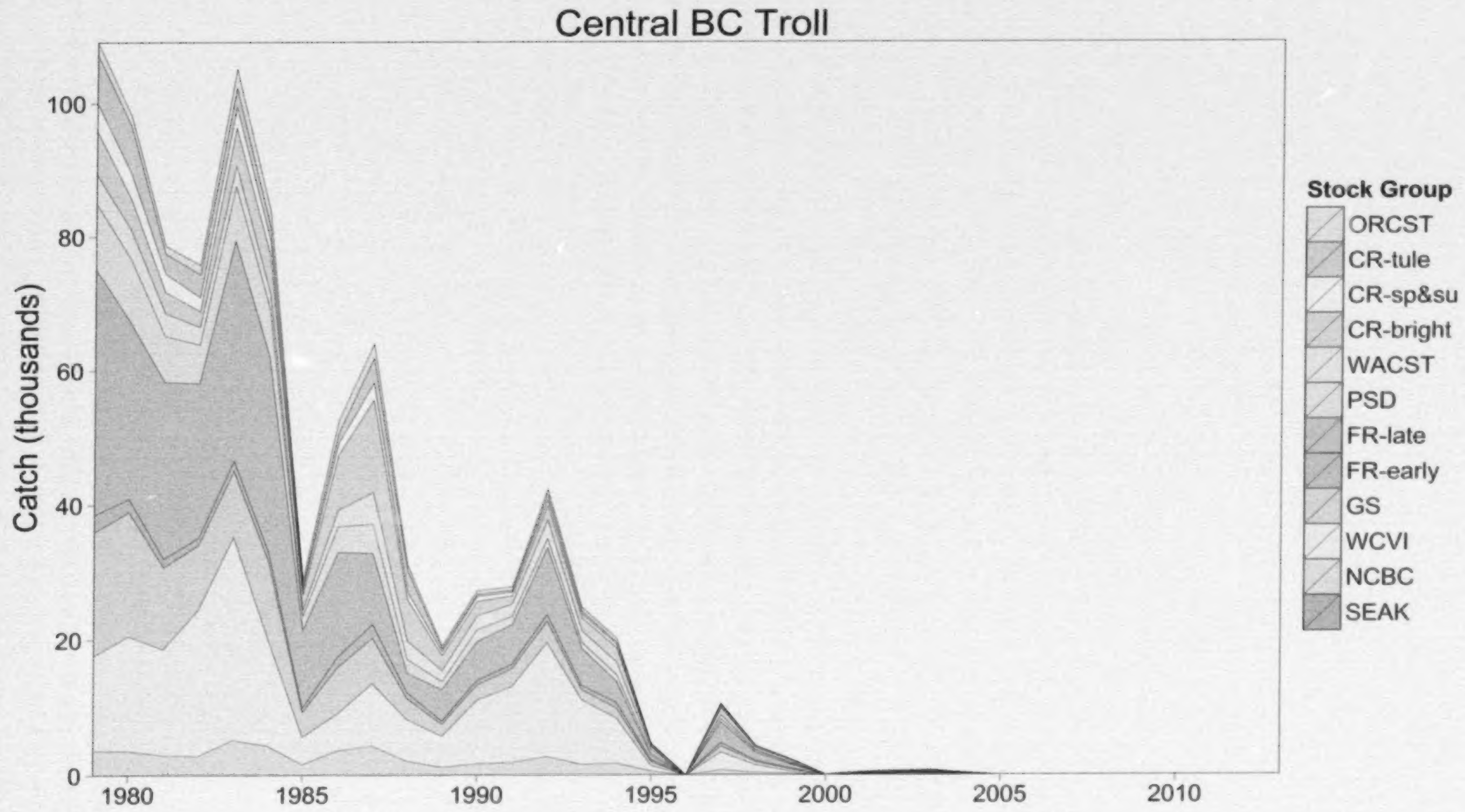
| | |
|---|---|
| ORCST | Oregon Coast |
| CR-tule | Columbia River-Fall Tule stocks (Spring Creek, Lower River Hatchery, and Cowlitz Fall) |
| CR-sp&su | Columbia River Spring and Summer stocks (Willamette, Cowlitz Spring, Columbia Summers) |
| CR-bright | Columbia River Fall Bright stocks (Upriver, Mid-Columbia, Lewis River Wild, Lyons Ferry) |
| WACST | Washington Coast |
| PSD | Puget Sound stocks (Nooksack Fall and Spring, Natural Fall Fingerlings, Hatchery Fall Fingerlings, Hatchery Yearlings, Skagit Wild, Stillaguamish Wild, Snohomish Wild) |
| FR-late | Fraser River Late stock |
| FR-early | Fraser River Early stocks |
| GS | Georgia Strait stocks (Upper, Lower Natural, Lower Hatchery) |
| WCVI | West Coast Vancouver Island Stocks (hatchery and natural) |
| NCBC | North Central British Columbia stocks |
| SEAK | Southeast Alaska stocks |



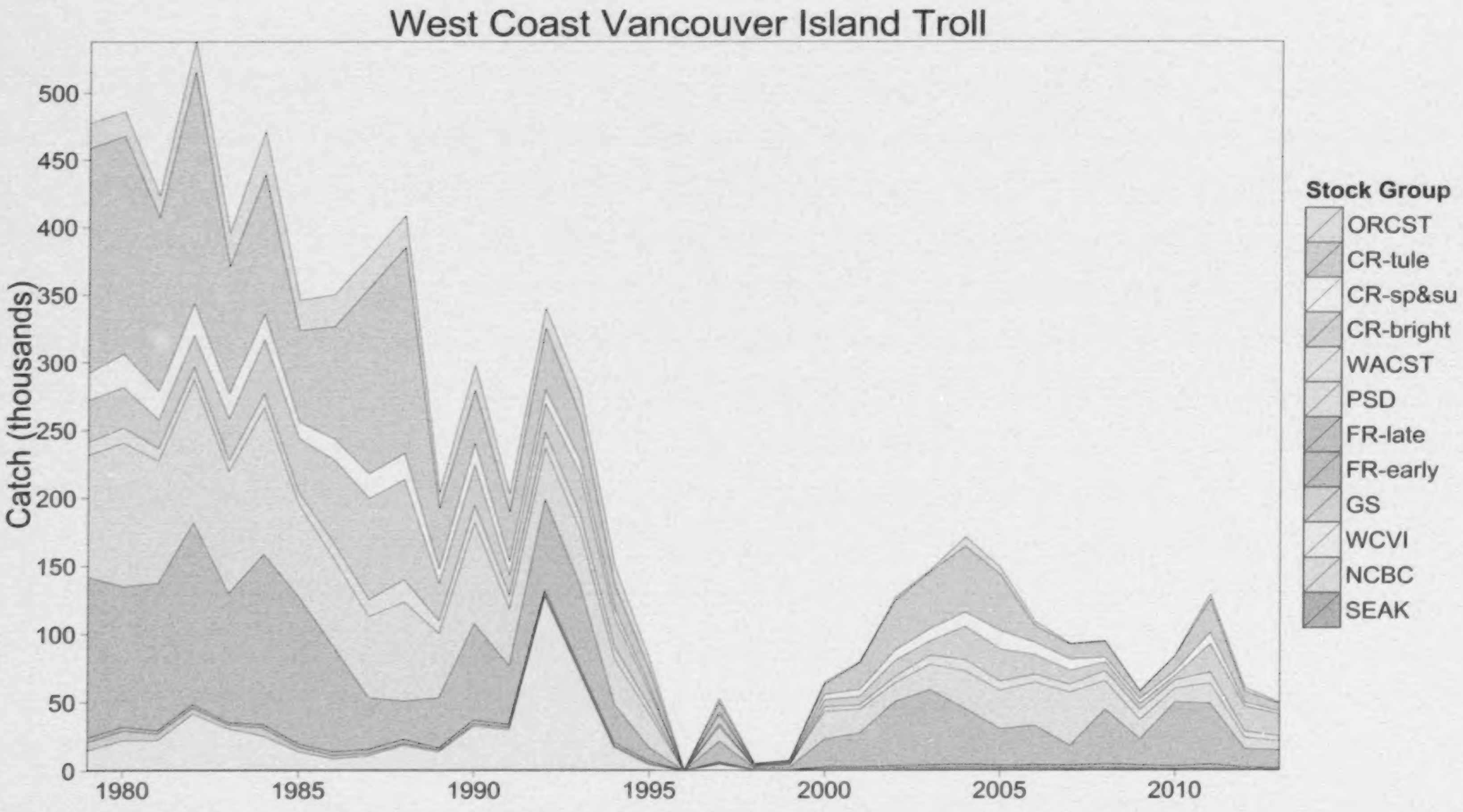
Appendix E1 Chinook Model estimates of landed catch stock composition for Alaska Troll 1979-2013



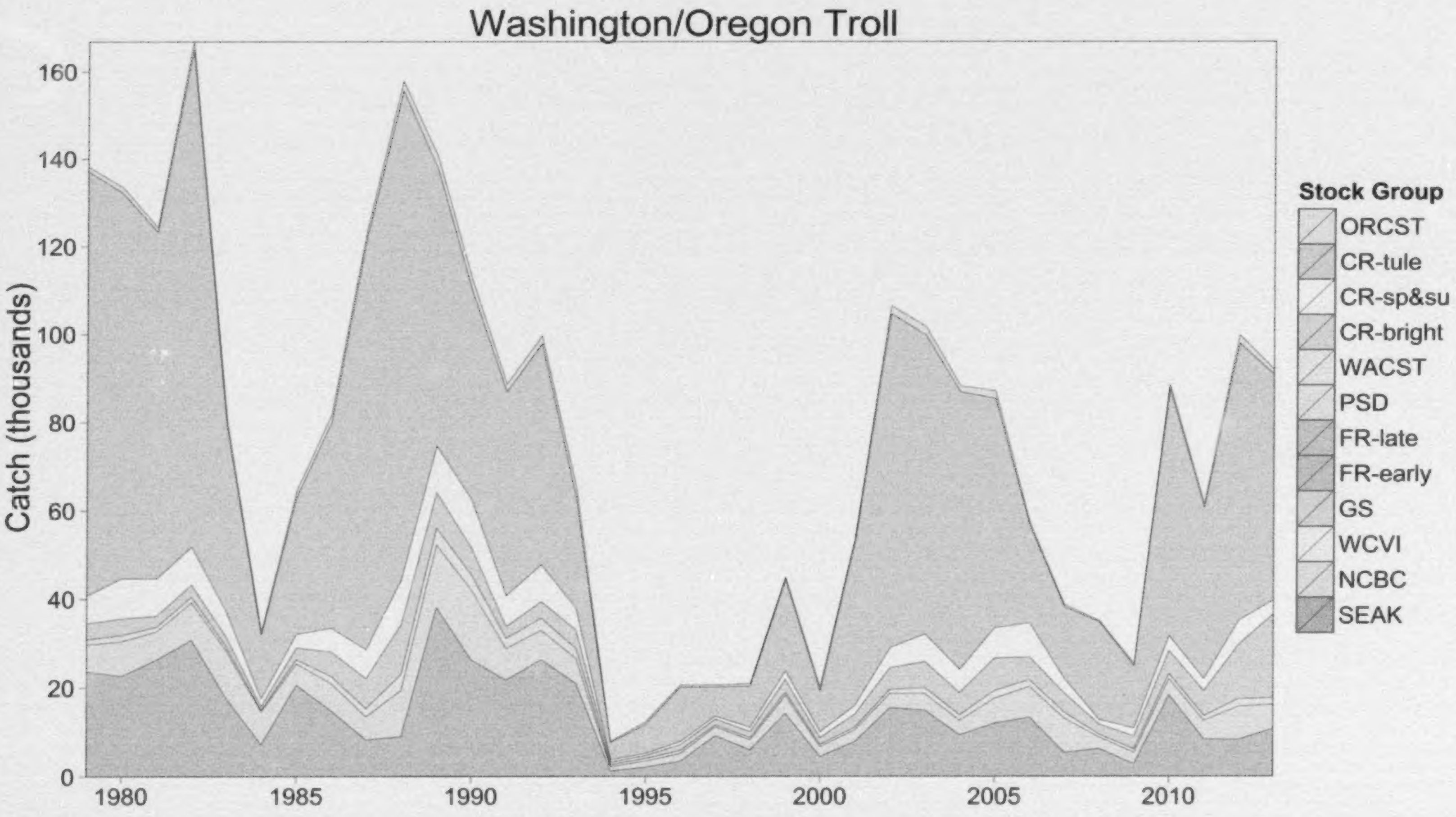
Appendix E2 Chinook Model estimates of landed catch stock composition for North BC Troll 1979-2013



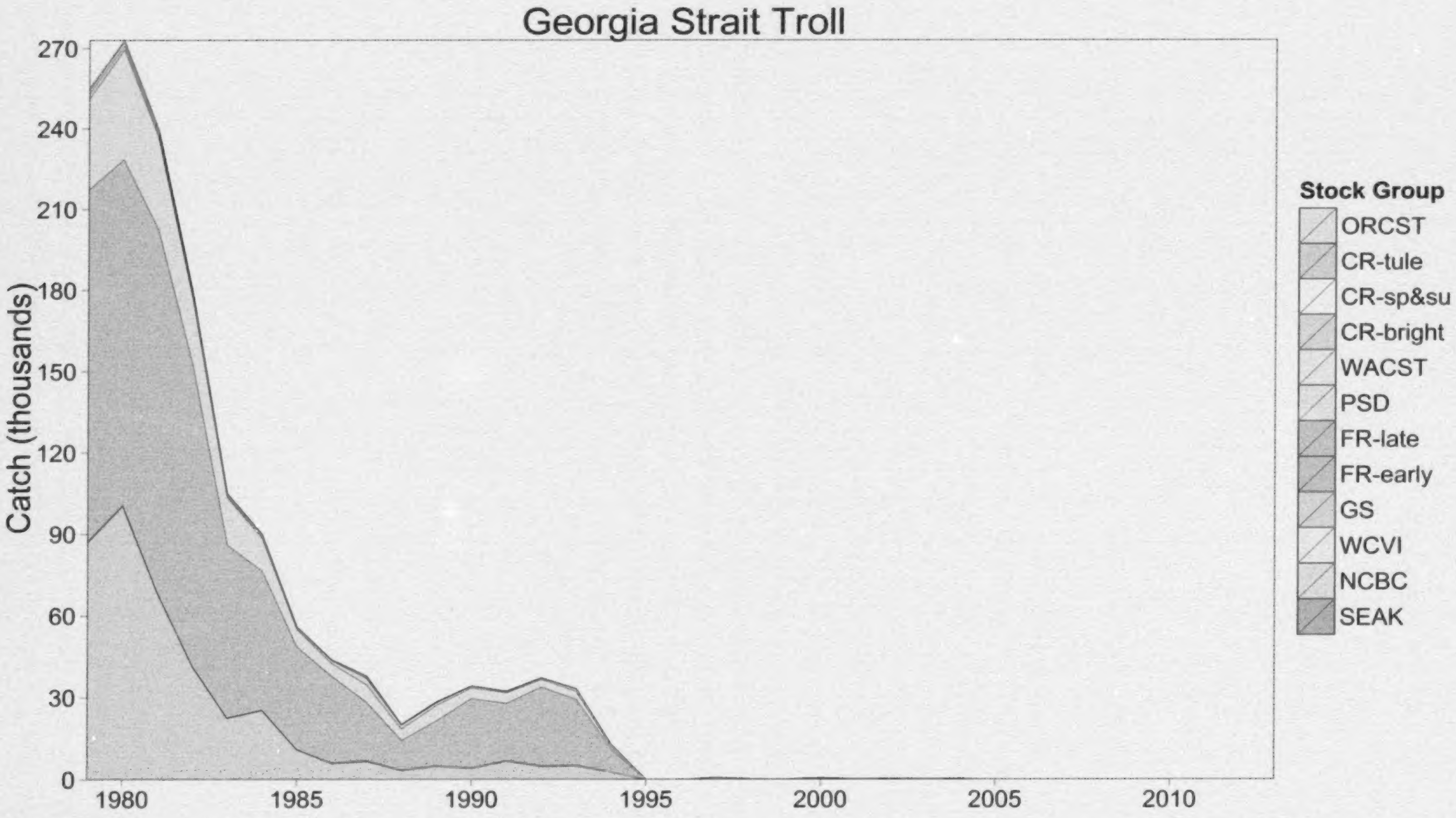
Appendix E3 Chinook Model estimates of landed catch stock composition for Central BC Troll 1979-2013



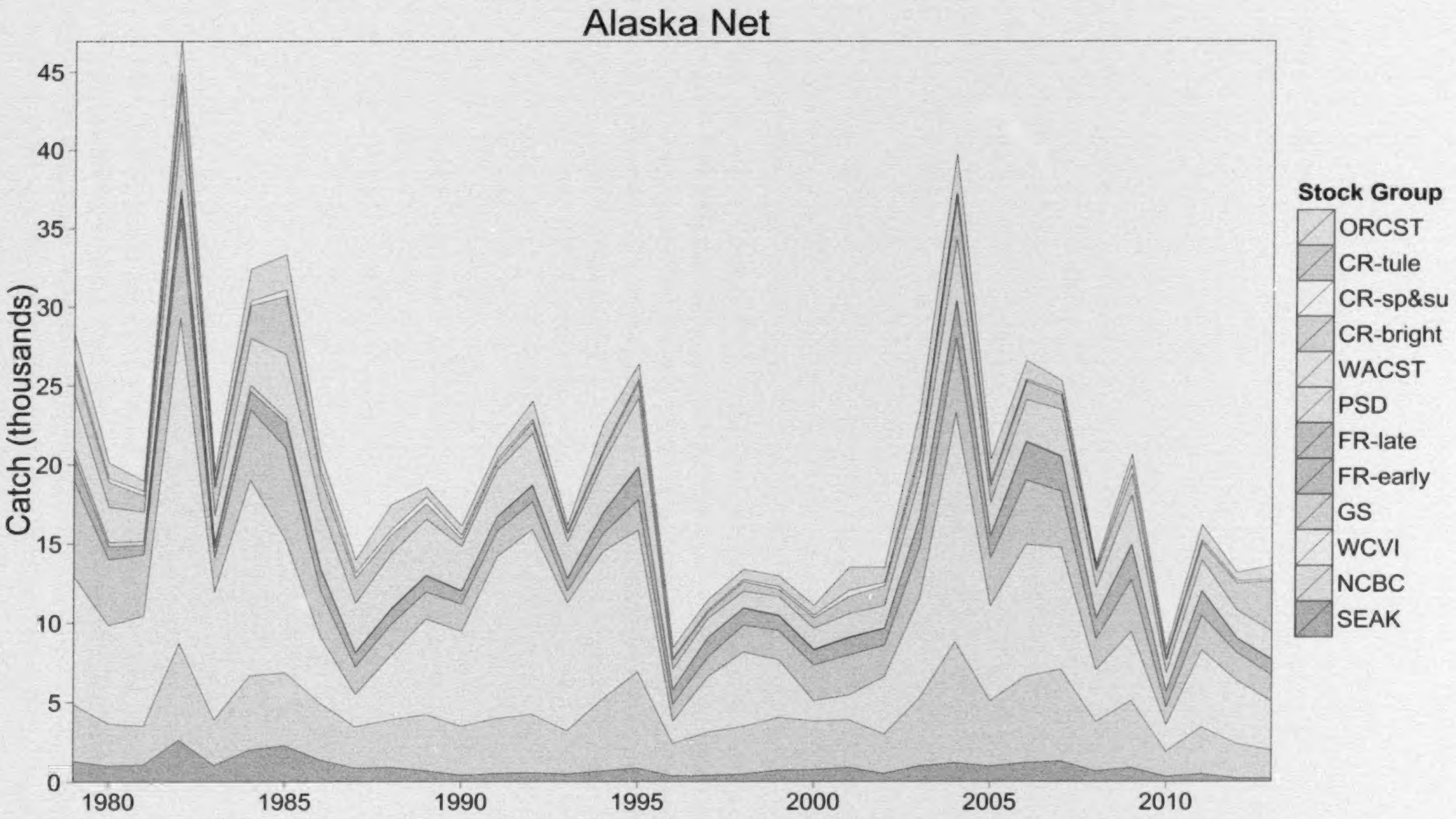
Appendix E4 Chinook Model estimates of landed catch stock composition for West Coast Vancouver Island Troll 1979-2013



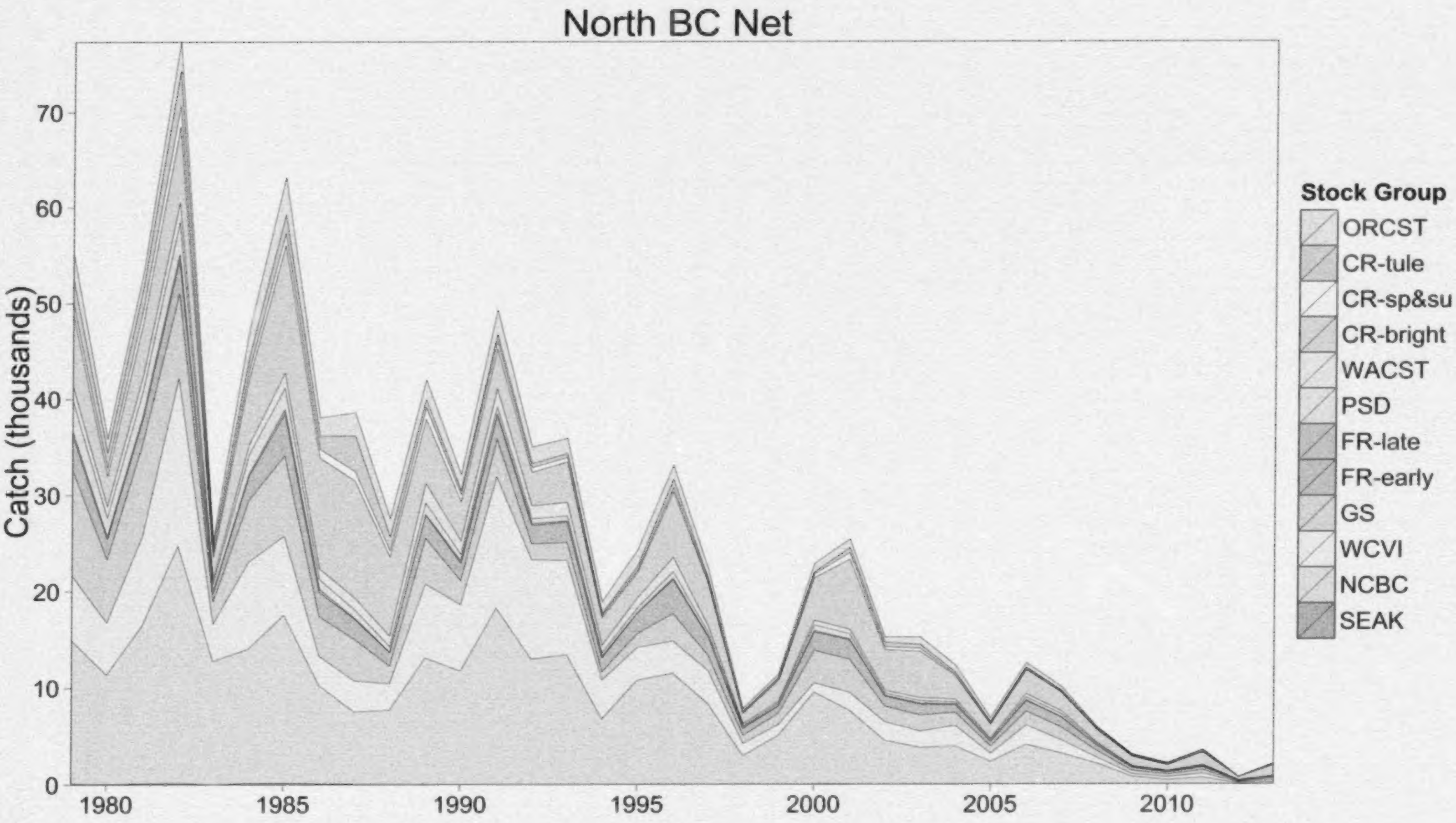
Appendix E5 Chinook Model estimates of landed catch stock composition for Washington/Oregon Troll 1979-2013


Georgia Strait Troll

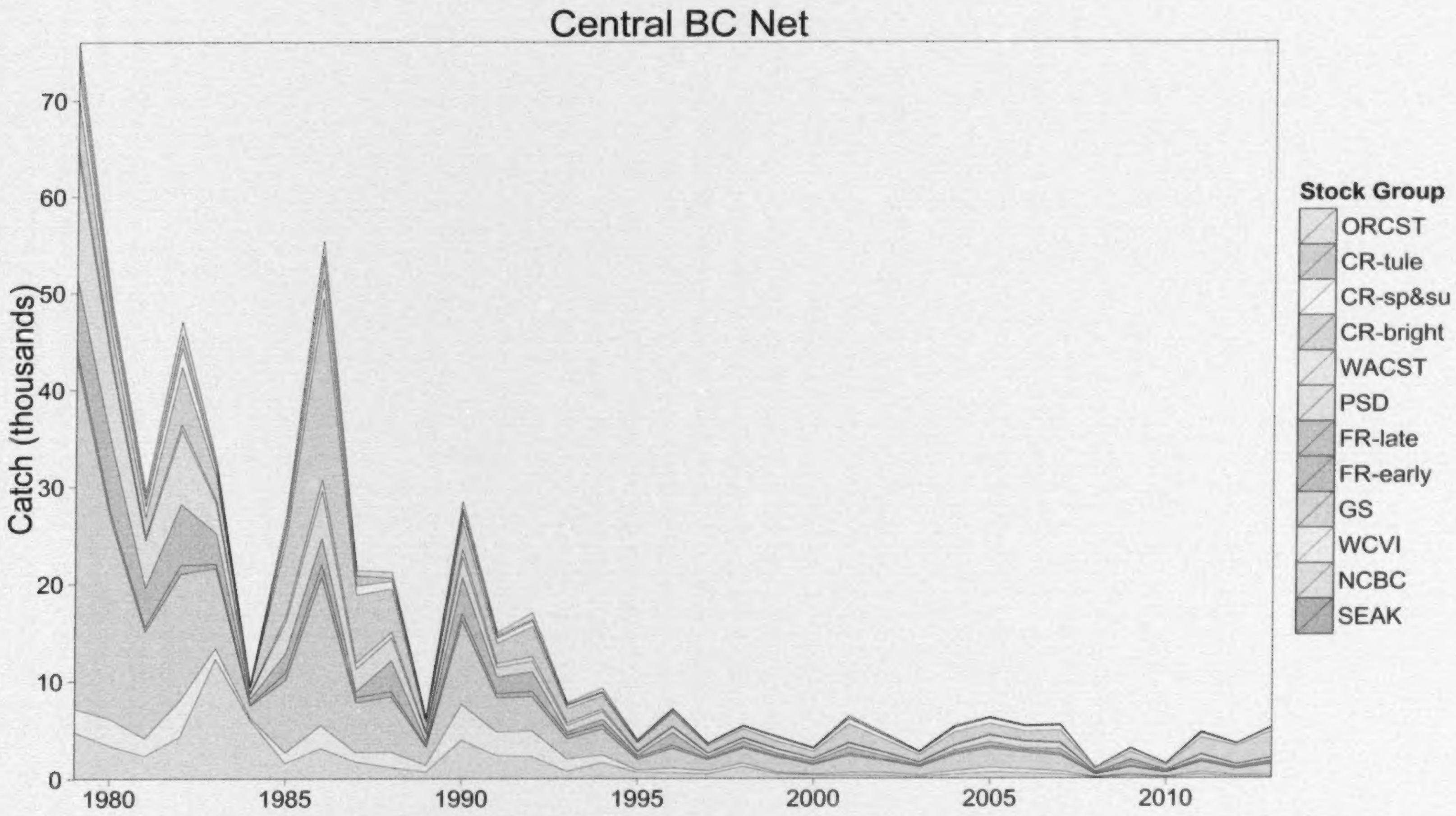
Appendix E6 Chinook Model estimates of landed catch stock composition for Georgia Strait Troll 1979-2013



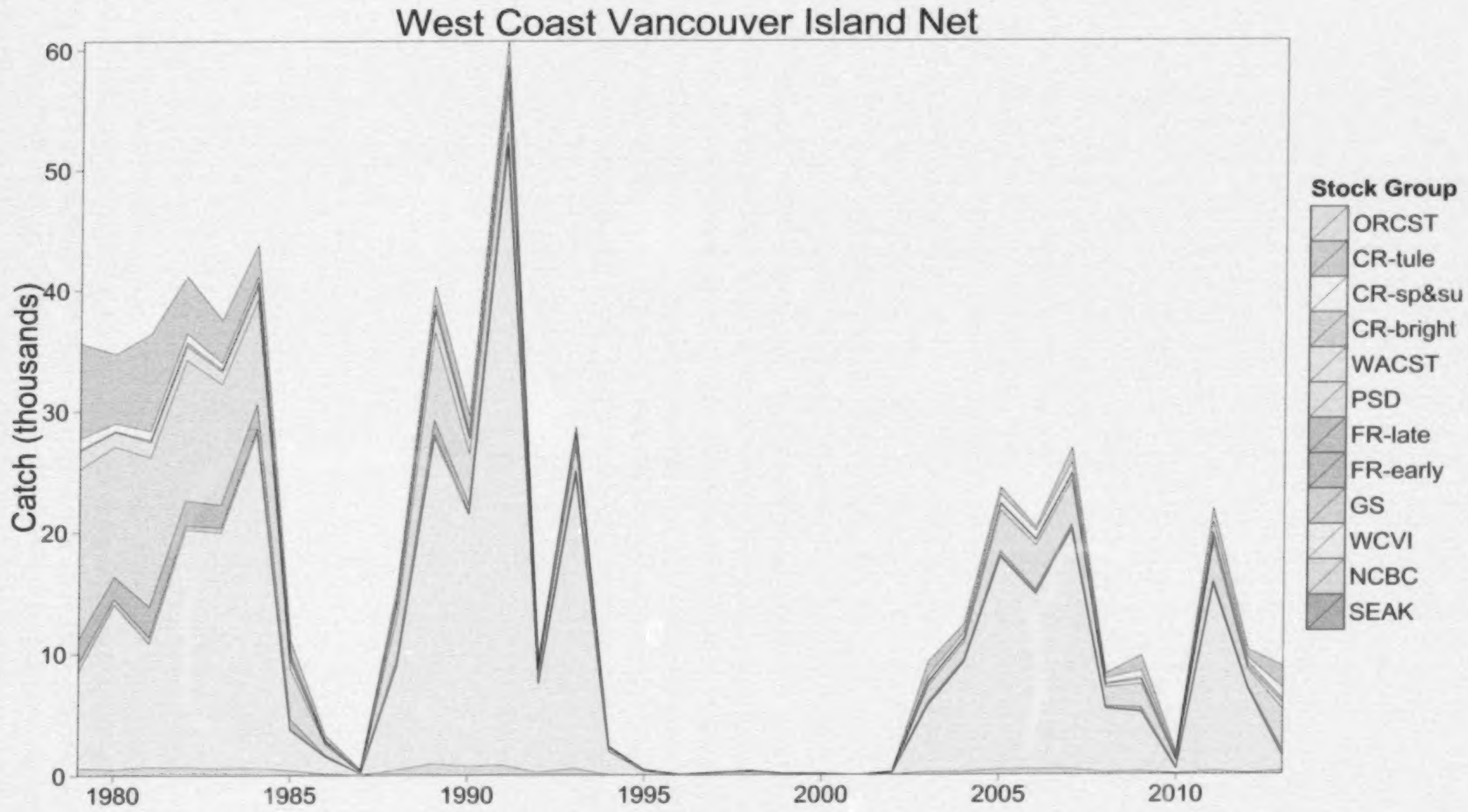
Appendix E7 Chinook Model estimates of landed catch stock composition for Alaska Net 1979-2013



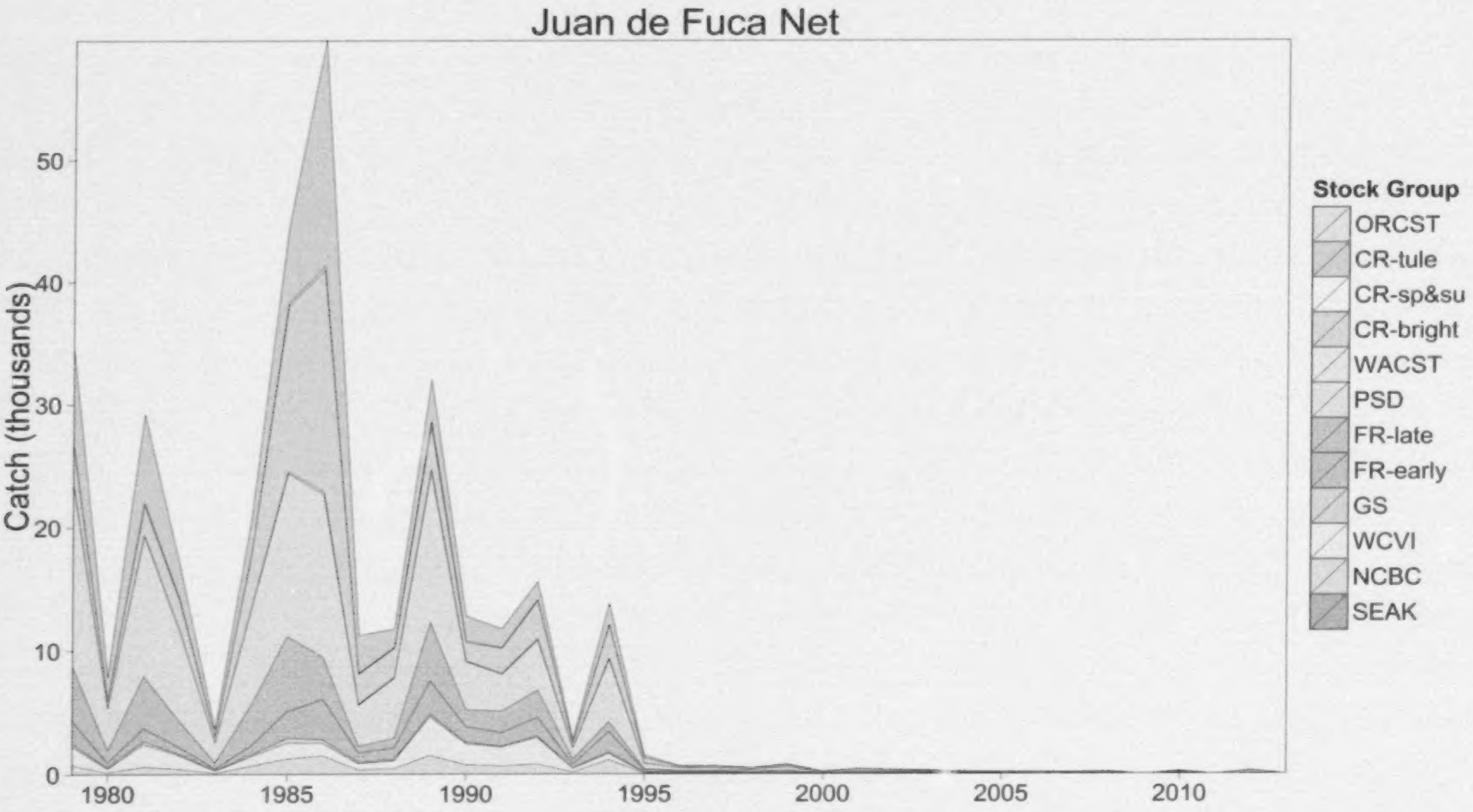
Appendix E8 Chinook Model estimates of landed catch stock composition for North BC Net 1979-2013



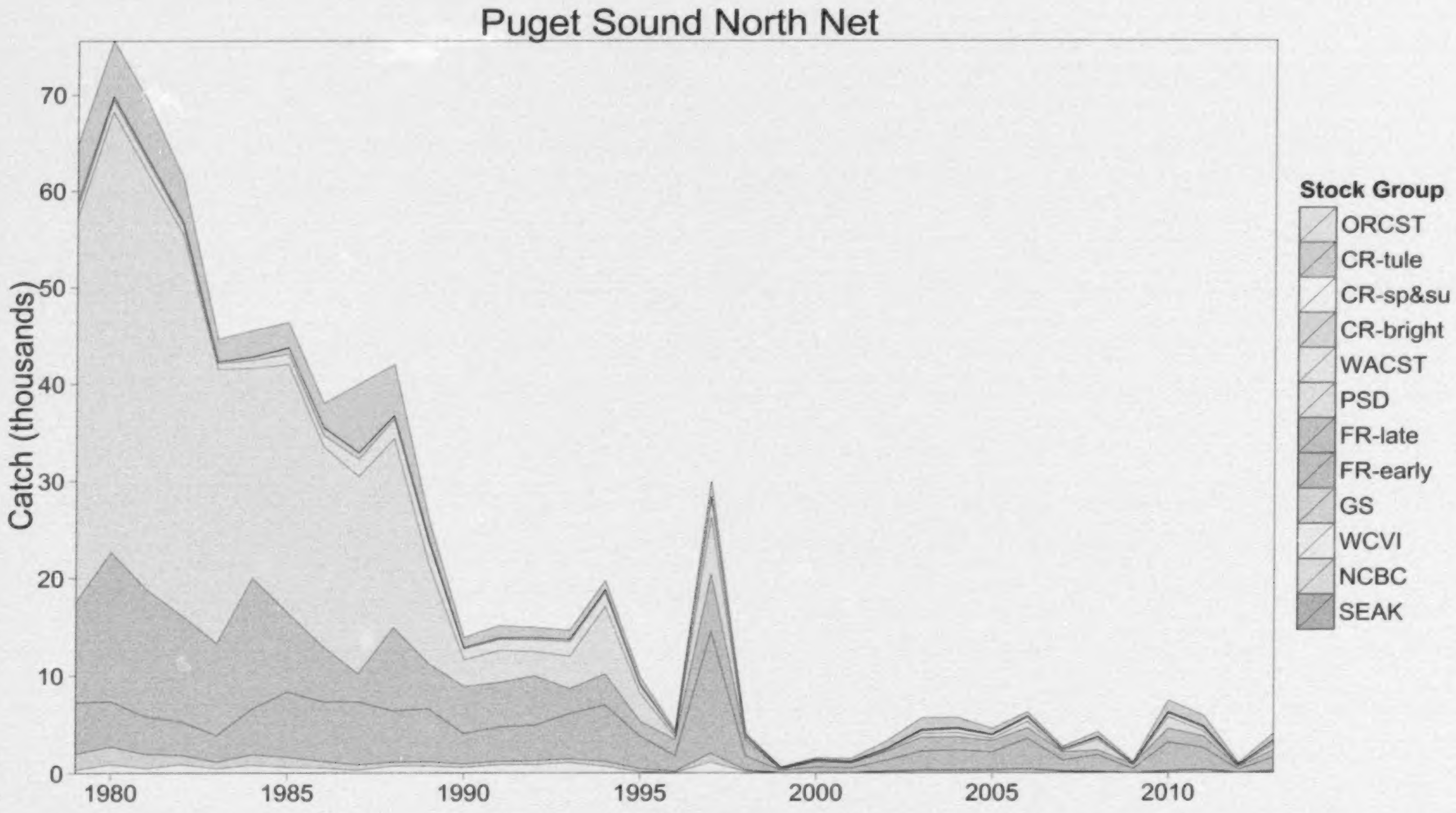
Appendix E9 Chinook Model estimates of landed catch stock composition for Central BC Net 1979-2013



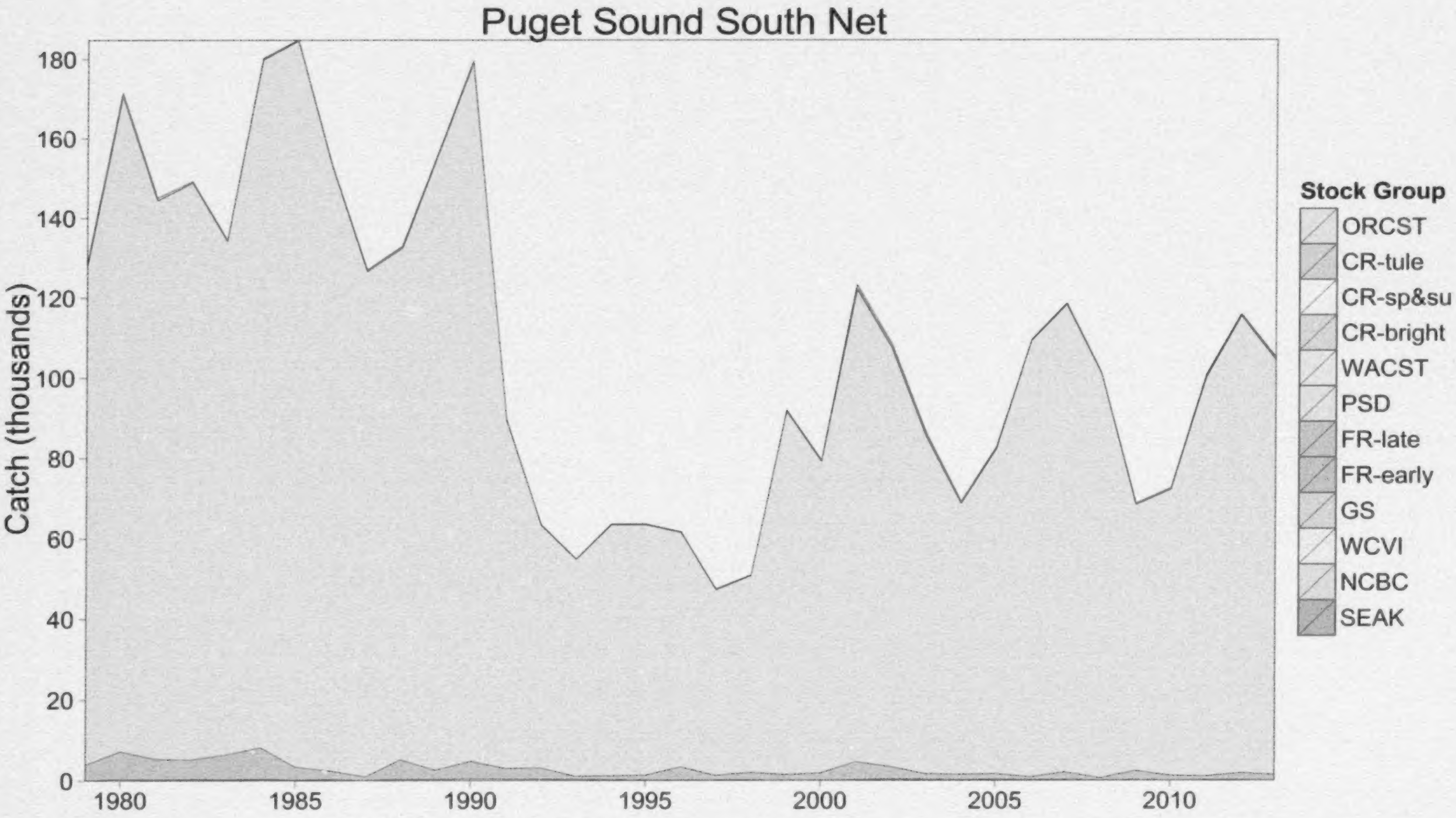
Appendix E10 Chinook Model estimates of landed catch stock composition for West Coast Vancouver Island Net 1979-2013



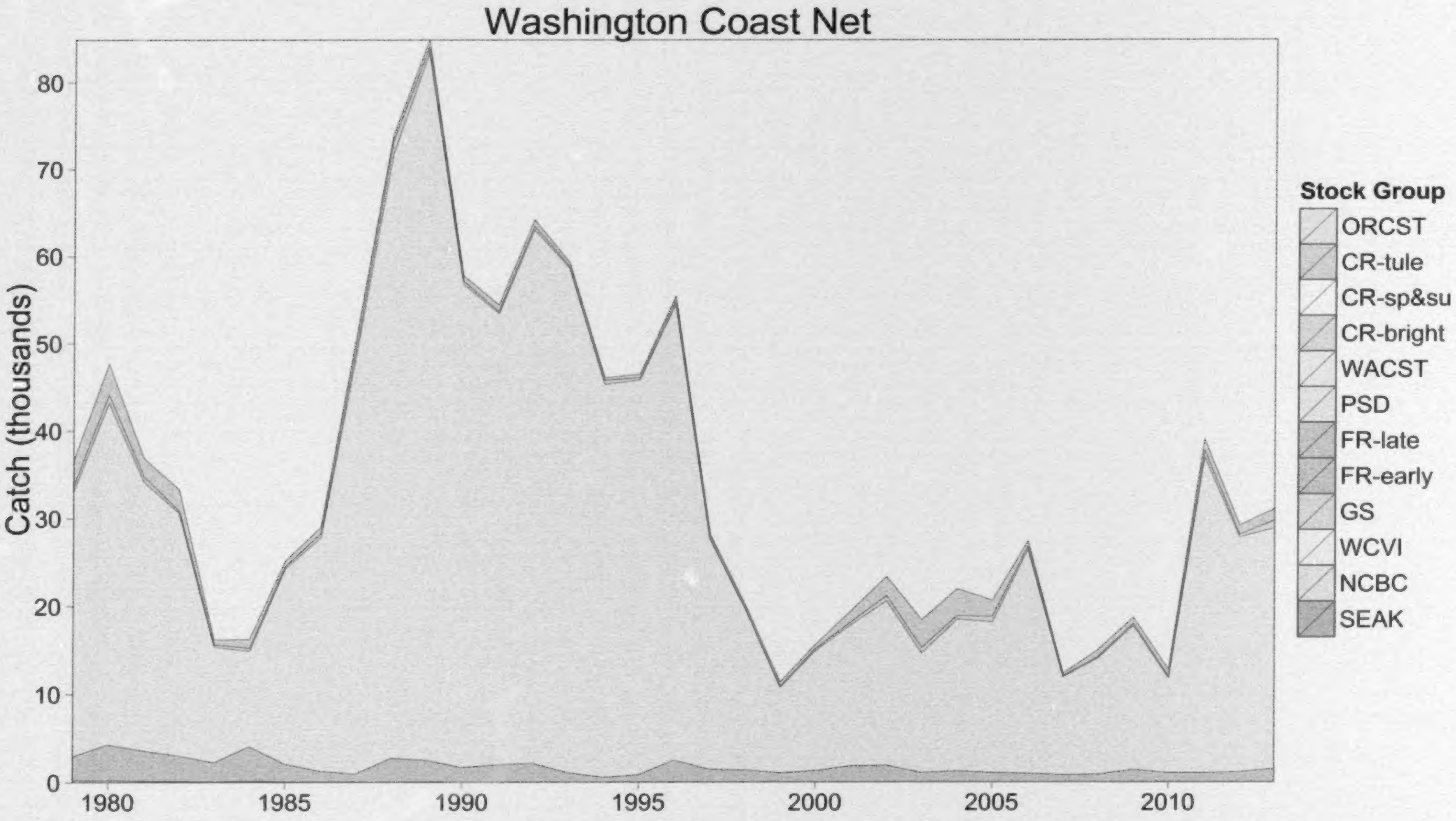
Appendix E11 Chinook Model estimates of landed catch stock composition for Juan de Fuca Net 1979-2013



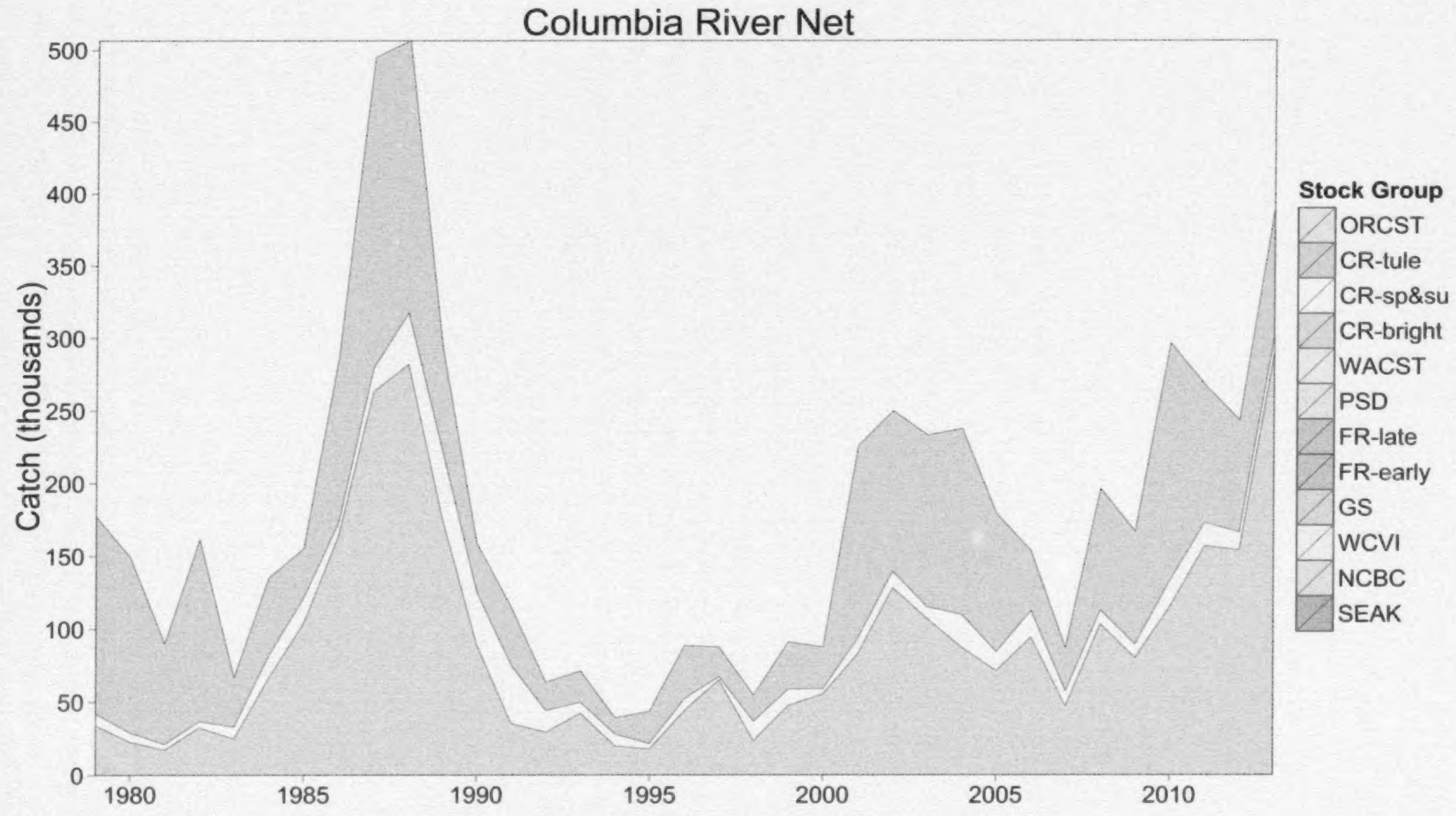
Appendix E12 Chinook Model estimates of landed catch stock composition for Puget Sound North Net 1979-2013



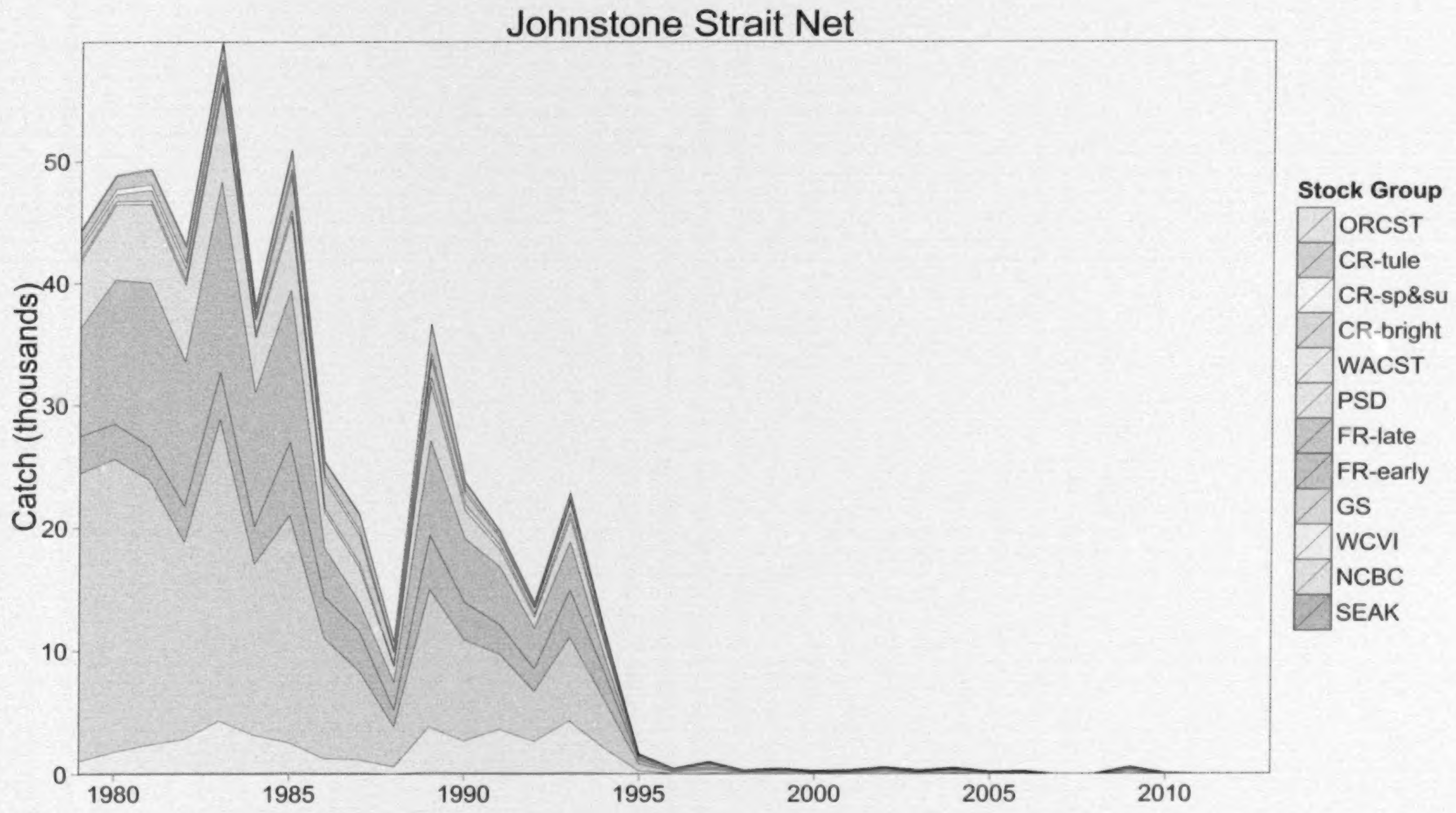
Appendix E13 Chinook Model estimates of landed catch stock composition for Puget Sound South Net 1979-2013



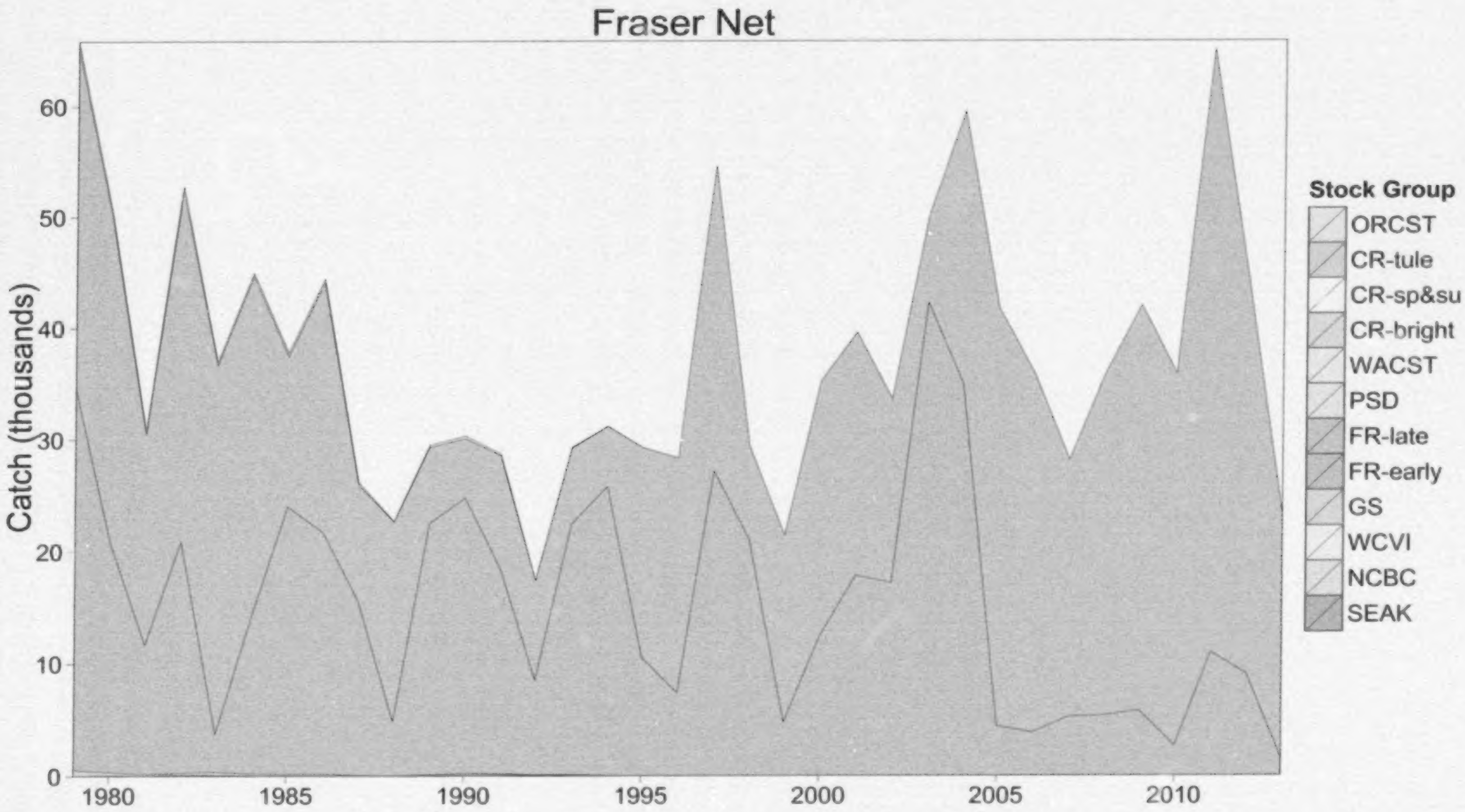
Appendix E14 Chinook Model estimates of landed catch stock composition for Washington Coast Net 1979-2013



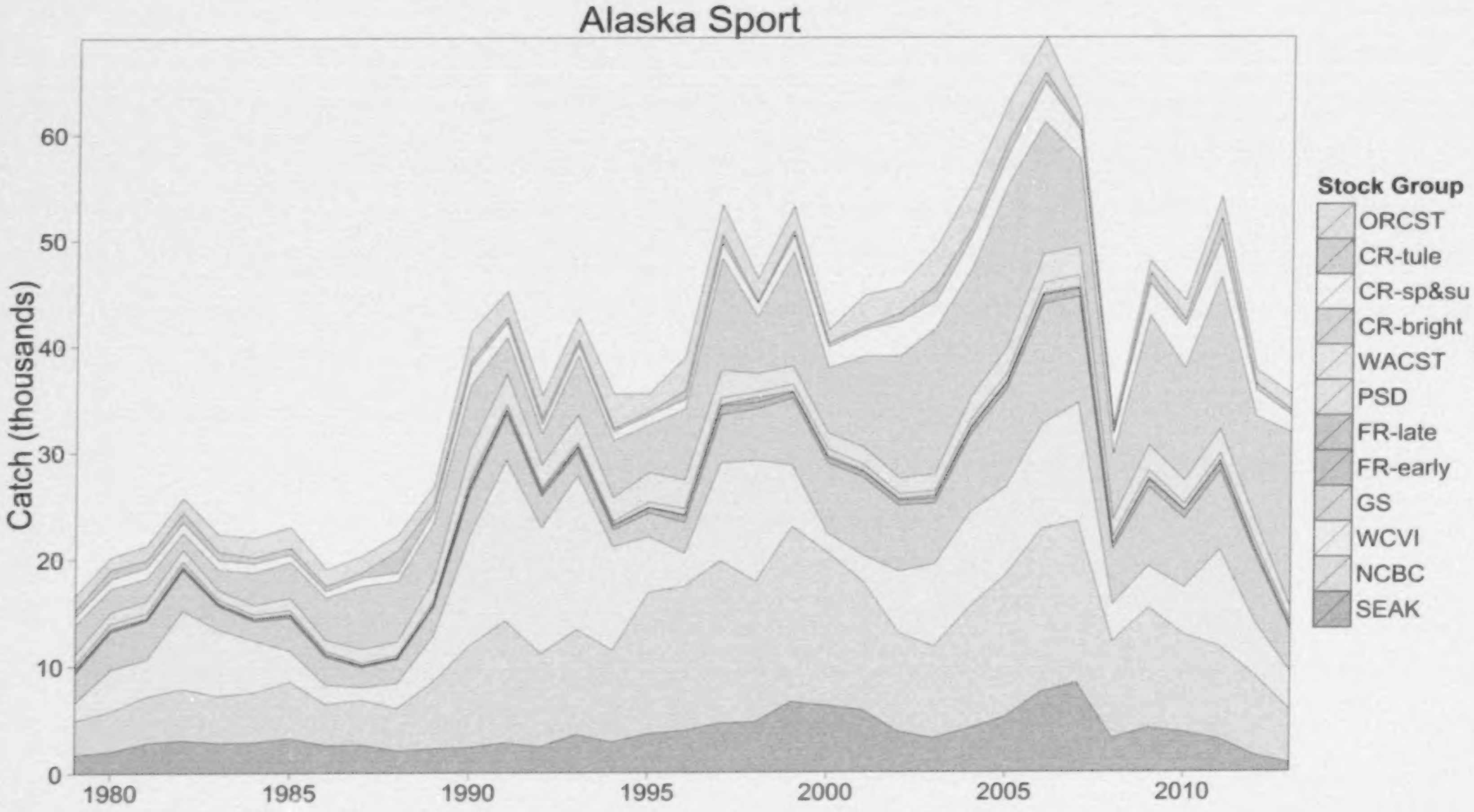
Appendix E15 Chinook Model estimates of landed catch stock composition for Columbia River Net 1979-2013



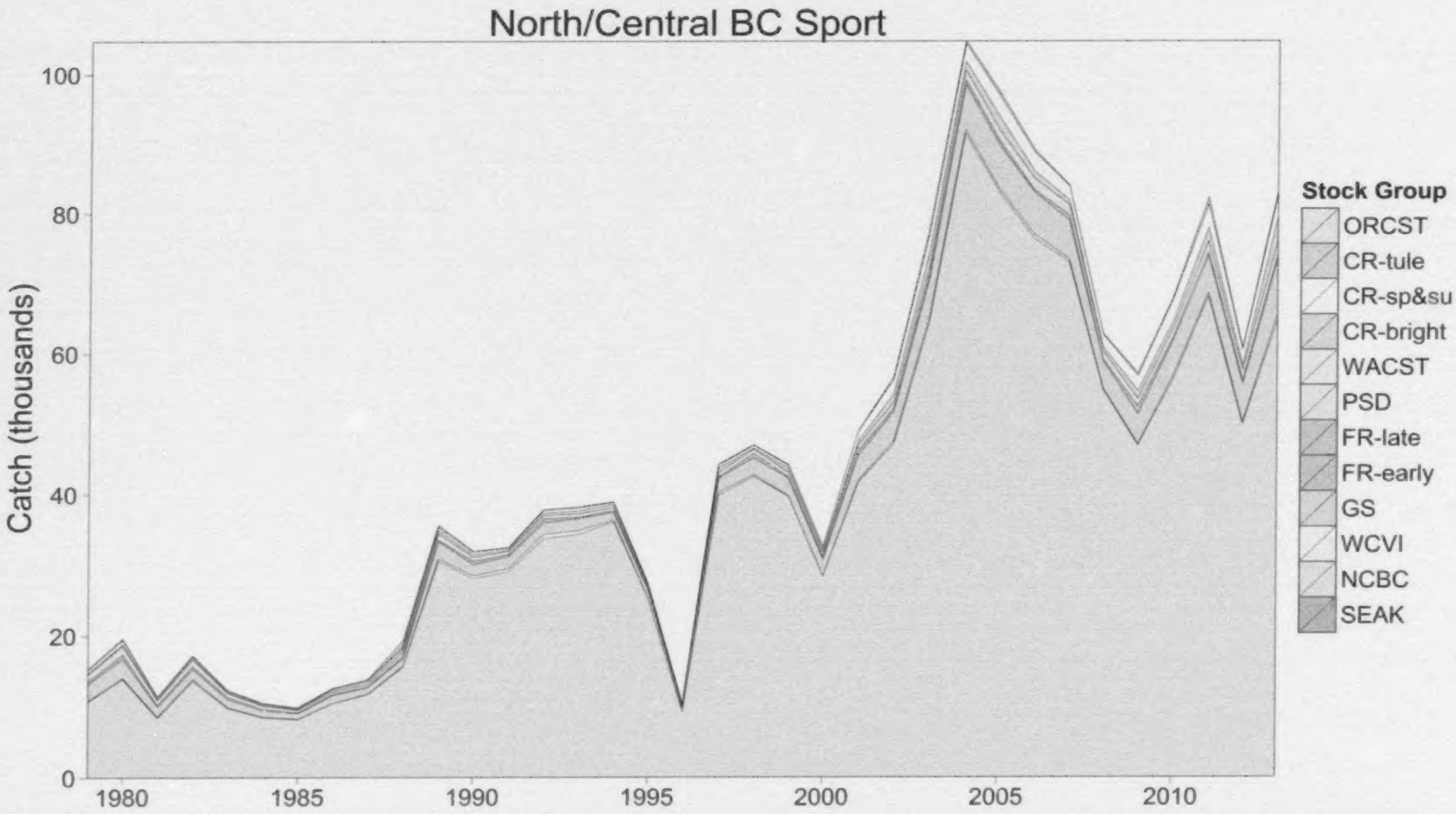
Appendix E16 Chinook Model estimates of landed catch stock composition for Johnstone Strait Net 1979-2013



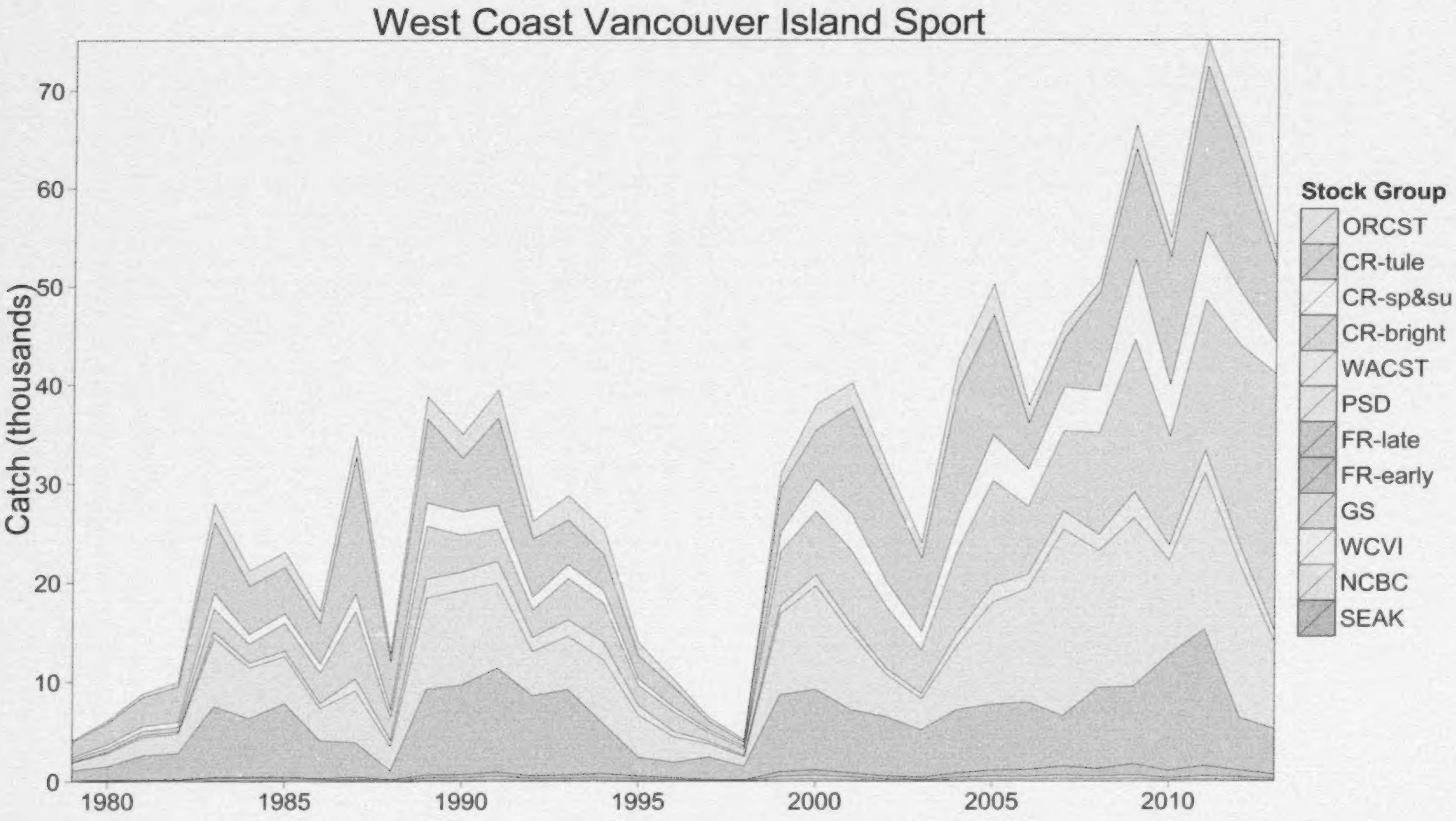
Appendix E17 Chinook Model estimates of landed catch stock composition for Fraser Net 1979-2013



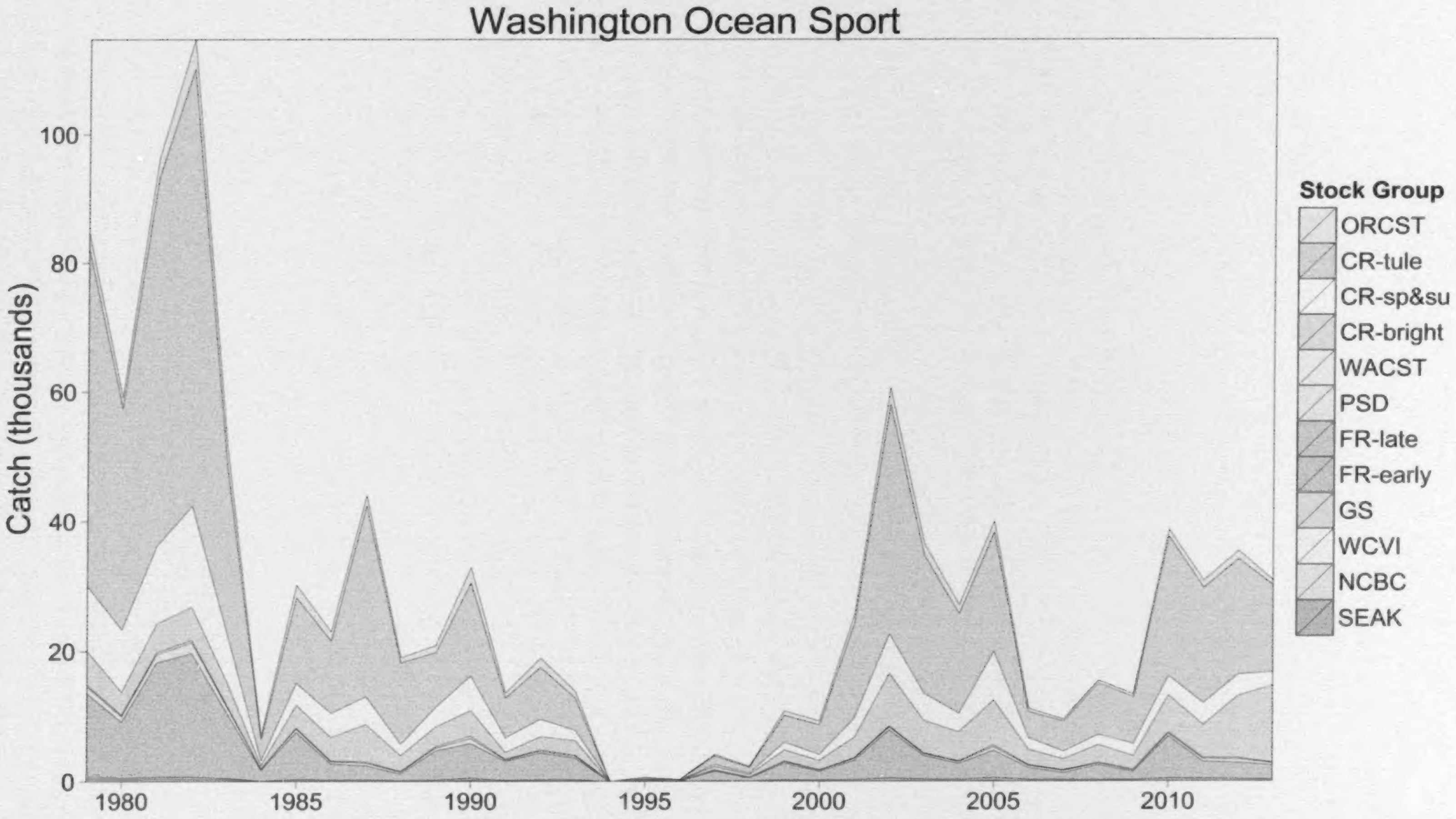
Appendix E18 Chinook Model estimates of landed catch stock composition for Alaska Sport 1979-2013



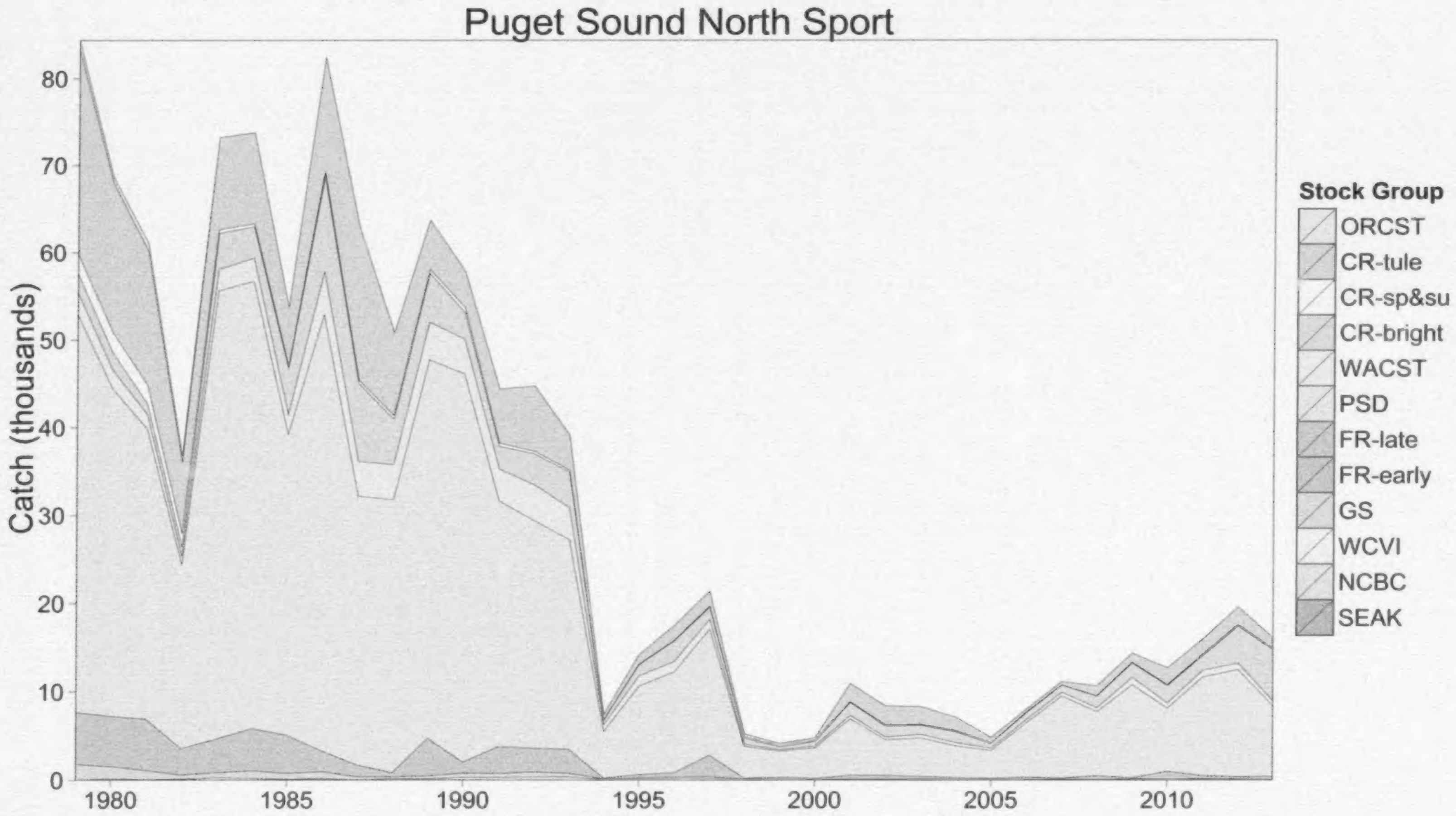
Appendix E19 Chinook Model estimates of landed catch stock composition for North/Central BC Sport 1979-2013



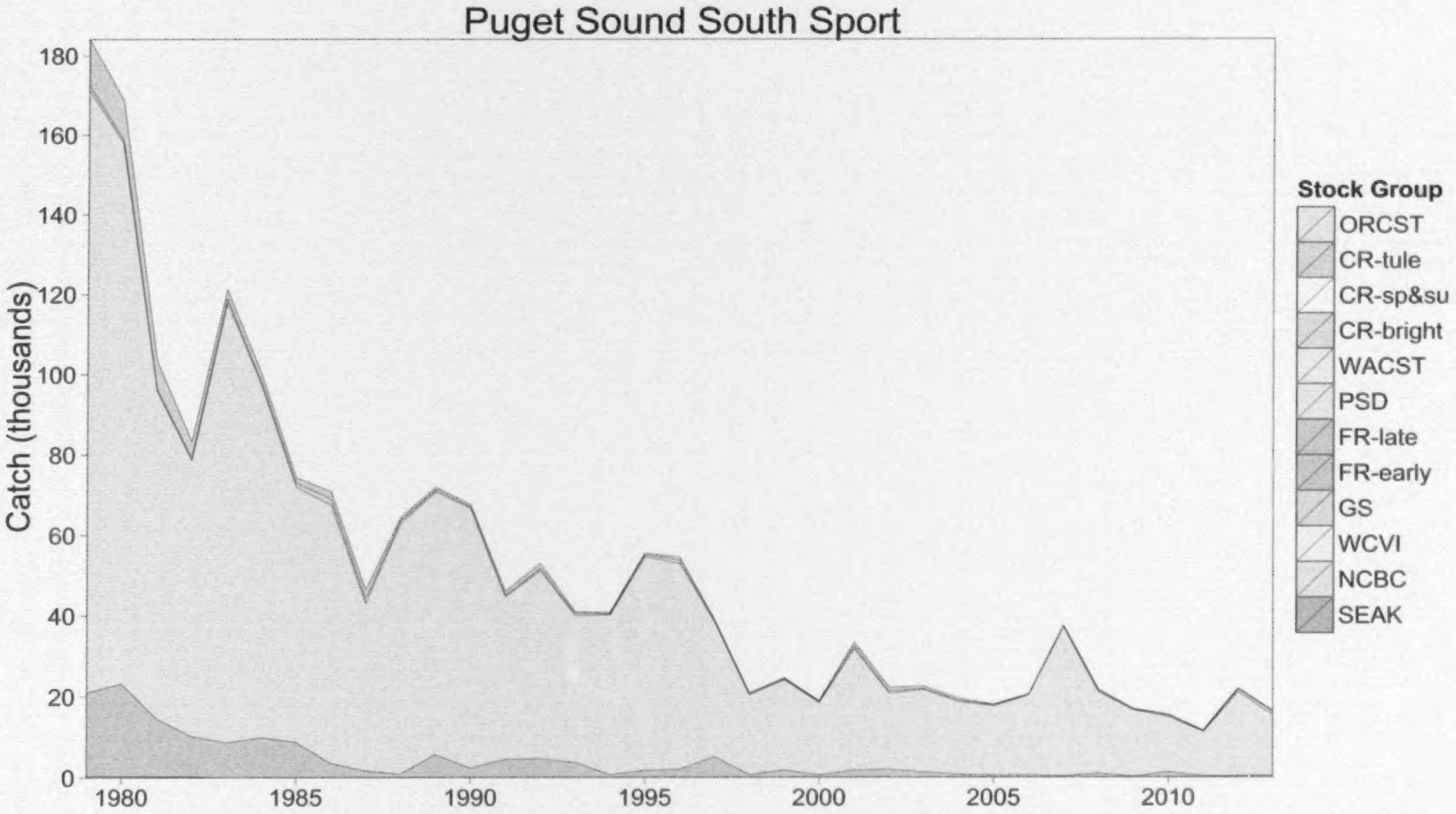
Appendix E20 Chinook Model estimates of landed catch stock composition for West Coast Vancouver Island Sport 1979-2013



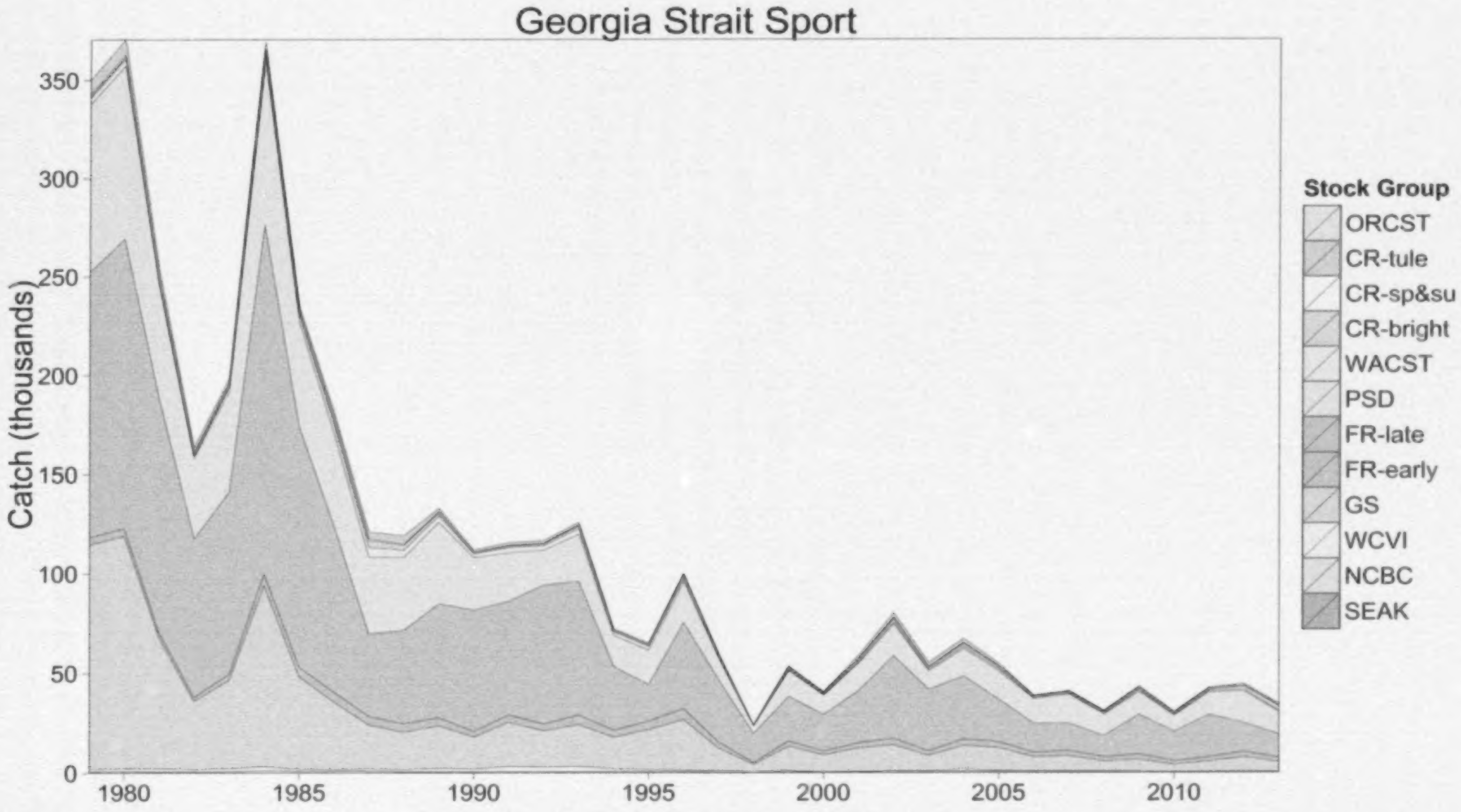
Appendix E21 Chinook Model estimates of landed catch stock composition for Washington Ocean Sport 1979-2013



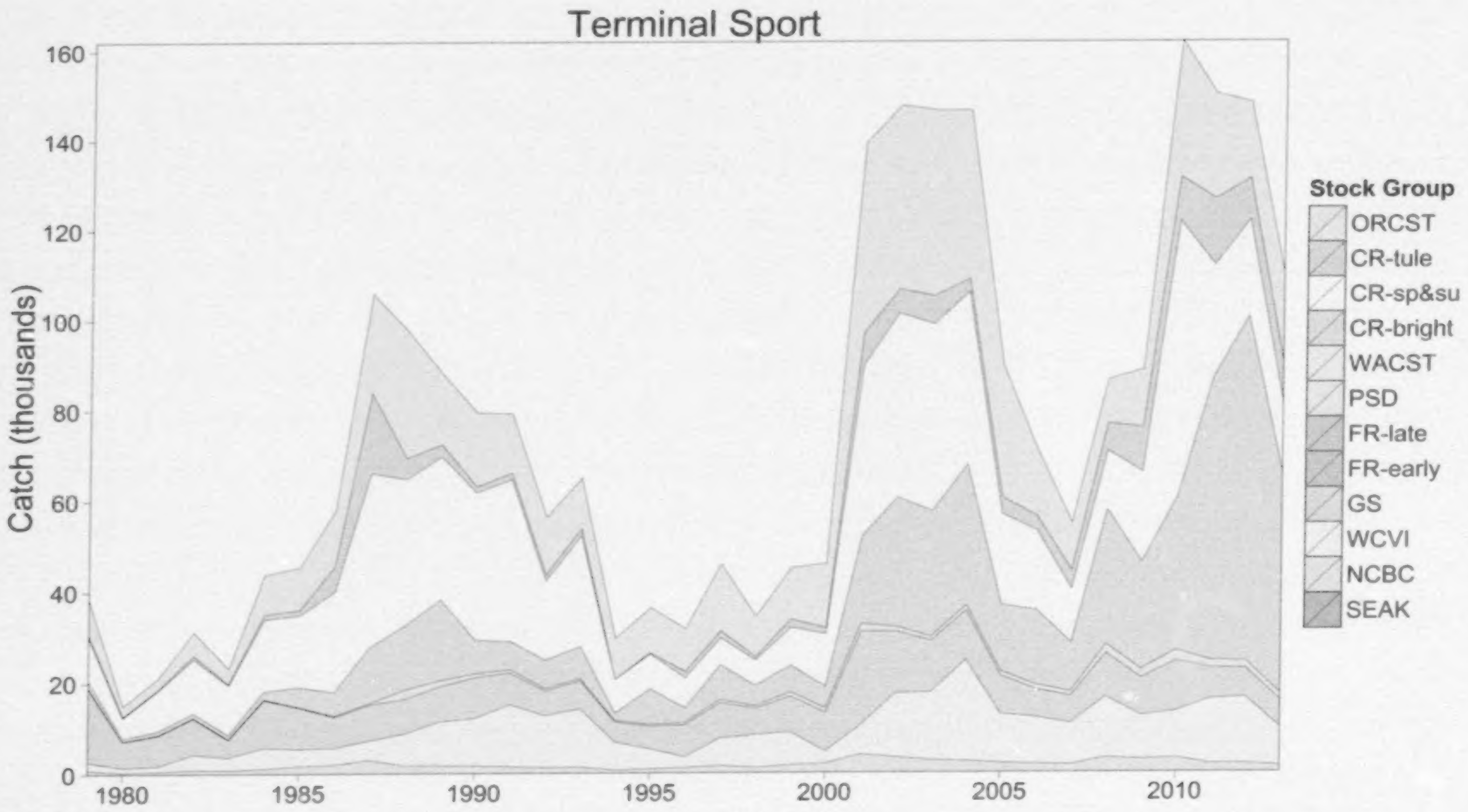
Appendix E22 Chinook Model estimates of landed catch stock composition for Puget Sound North Sport 1979-2013



Appendix E23 Chinook Model estimates of landed catch stock composition for Puget Sound South Sport 1979-2013



Appendix E24 Chinook Model estimates of landed catch stock composition for Georgia Strait Sport 1979-2013



Appendix E25 Chinook Model estimates of landed catch stock composition for Terminal Sport 1979-2013

# APPENDIX F: INCIDENTAL MORTALITY RATES APPLIED IN THE CTC MODEL

*Appendix F. Incidental mortality rates applied in the CTC model. Rates in original model were applied to all years. In the current model, rates in some fisheries vary in accordance to changes in management regulations.*

| | | Rates in original Model | | | Rates applied in Model CLB1402 | | | |
|---|---|---|---|---|---|---|---|---|
| Fishery Number | Fishery | Sublegal Rate | Legal Rate | Dropoff | Sublegal Rate | Legal Rate | Dropoff | Applicable Years |
| 1 | Alaska T | 0.3 | 0.3 | 0 | 0.255 | 0.211 | 0.008 | All |
| 2 | North T | 0.3 | 0.3 | 0 | 0.255 | 0.211 | 0.017 | 1979–1995 |
| 2 | North T | | | | 0.220 | 0.185 | 0.016 | 1996–current |
| 3 | Centr T | 0.3 | 0.3 | 0 | 0.255 | 0.211 | 0.017 | 1979–1995 |
| 3 | Centr T | | | | 0.220 | 0.185 | 0.016 | 1996–current |
| 4 | WCVI T | 0.3 | 0.3 | 0 | 0.255 | 0.211 | 0.017 | 1979–1997 |
| 4 | WCVI T | | | | 0.220 | 0.185 | 0.016 | 1998–current |
| 5 | WA/OR T | 0.3 | 0.3 | 0 | 0.255 | 0.211 | 0.017 | 1979–1983 |
| 5 | WA/OR T | | | | 0.220 | 0.185 | 0.016 | 1984–current |
| 6 | Str of Geo T | 0.3 | 0.3 | 0 | 0.255 | 0.211 | 0.017 | 1979–1985,1987–1996 |
| 6 | Str of Geo T | | | | 0.220 | 0.185 | 0.016 | 1986, 1998–current |
| 7 | Alaska N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 8 | North N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 9 | Centr N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 10 | WCVI N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 11 | J De F N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 12 | PgtNth N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 13 | PgtSth N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 14 | WashCst N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 15 | Col R N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 16 | John St N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 17 | Fraser N | 0.9 | 0.9 | 0 | 0.9 | 0.9 | 0 | All |
| 18 | Alaska S | 0.3 | 0.3 | 0 | 0.123 | 0.123 | 0.036 | All |
| 19 | Nor/Cen S | 0.3 | 0.3 | 0 | 0.123 | 0.123 | 0.036 | All |
| 20 | WCVI S | 0.3 | 0.3 | 0 | 0.123 | 0.123 | 0.069 | All |
| 21 | WashOcn S | 0.3 | 0.3 | 0 | 0.123 | 0.123 | 0.069 | All |
| 22 | PgtNth S | 0.3 | 0.3 | 0 | 0.123 | 0.123 | 0.145 | All |
| 23 | PgtSth S | 0.3 | 0.3 | 0 | 0.123 | 0.123 | 0.145 | All |
| 24 | Str of Geo S | 0.3 | 0.3 | 0 | 0.322 | 0.322 | 0.069 | 1979–1981 |
| 24 | Str of Geo S | | | | 0.123 | 0.123 | 0.069 | 1982–current |
| 25 | Col R S | 0.3 | 0.3 | 0 | 0.123 | 0.123 | 0.069 | All |

# APPENDIX G: TIME SERIES OF ABUNDANCE INDICES

*Appendix G. Time series of abundance indices from 1979 to 2015 for SEAK, NBC, and WCVI AABM fisheries as estimated by CTC Chinook Model calibrations CLB1402 (1979-2015).*

| Year | Alaska T | North T | WCVI T |
|---|---|---|---|
| 1979 | 0.96 | 1.04 | 1.11 |
| 1980 | 1.02 | 0.98 | 0.97 |
| 1981 | 0.92 | 0.94 | 0.93 |
| 1982 | 1.09 | 1.04 | 1.00 |
| 1983 | 1.26 | 1.18 | 0.91 |
| 1984 | 1.45 | 1.36 | 0.98 |
| 1985 | 1.31 | 1.29 | 0.97 |
| 1986 | 1.50 | 1.46 | 1.03 |
| 1987 | 1.73 | 1.73 | 1.20 |
| 1988 | 2.11 | 1.82 | 1.14 |
| 1989 | 1.78 | 1.64 | 0.99 |
| 1990 | 1.81 | 1.60 | 0.90 |
| 1991 | 1.75 | 1.51 | 0.77 |
| 1992 | 1.66 | 1.40 | 0.80 |
| 1993 | 1.65 | 1.40 | 0.70 |
| 1994 | 1.51 | 1.22 | 0.53 |
| 1995 | 1.07 | 0.98 | 0.42 |
| 1996 | 0.96 | 0.94 | 0.50 |
| 1997 | 1.25 | 1.11 | 0.60 |
| 1998 | 1.19 | 0.99 | 0.58 |
| 1999 | 1.10 | 0.95 | 0.52 |
| 2000 | 0.98 | 0.94 | 0.52 |
| 2001 | 1.18 | 1.22 | 0.82 |
| 2002 | 1.78 | 1.71 | 1.19 |
| 2003 | 2.23 | 1.92 | 1.24 |
| 2004 | 2.04 | 1.78 | 1.03 |
| 2005 | 1.81 | 1.54 | 0.86 |
| 2006 | 1.51 | 1.23 | 0.67 |
| 2007 | 1.15 | 0.93 | 0.52 |
| 2008 | 0.90 | 0.82 | 0.57 |
| 2009 | 1.04 | 0.95 | 0.58 |
| 2010 | 1.14 | 1.10 | 0.79 |
| 2011 | 1.41 | 1.19 | 0.81 |
| 2012 | 1.13 | 1.07 | 0.72 |
| 2013 | 1.63 | 1.51 | 1.04 |
| 2014 | 2.57 | 1.99 | 1.20 |
| 2015 | 1.88 | 1.50 | 0.99 |

*Note:* This time series is NOT the first postseason AI for each year and is for trend analysis only (Figures 3.10–3.12). For evaluation of overage and underage, use the first postseason AI instead (Source 1402 PABD).

# APPENDIX H: ABUNDANCE INDICES IN TOTAL AND BY MODEL STOCK FOR AABM FISHERIES, FROM CALIBRATION 1402

## LIST OF APPENDIX H TABLES

Appendix H1. Abundance indices (AIs) for the Southeast Alaska troll fishery by model stock and year (stock groups 1–15 this page; 16–30 on following page), from CLB 1402. Numbers shown represent the portion of the AI total estimated for each model stock; the summation across all 30 stock groups equals the AI total for each calendar year. ........ 104

Appendix H2. Abundance indices (AIs) for the Northern BC troll fishery by stock and year (stock groups 1–15 this page; 16–30 on following page), from CLB 1402. Numbers shown represent the portion of the AI total estimated for each model stock; the summation across all 30 stock groups equals the AI total for each calendar year. ........ 106

Appendix H3. Abundance indices (AIs) for the WCVI troll fishery by stock and year stock groups 1–15 this page; 16–30 on following page), from CLB 1402. Numbers shown represent the portion of the AI total estimated for each model stock; the summation across all 30 stock groups equals the AI total for each calendar year. ........ 108

*Appendix H1. Abundance indices (AIs) for the Southeast Alaska troll fishery by model stock and year (stock groups 1–15 this page; 16–30 on following page), from CLB 1402. Numbers shown represent the portion of the AI total estimated for each model stock; the summation across all 30 stock groups equals the AI total for each calendar year.*

| Year | Alaska South SE | North/Central | Fraser Early | Fraser Late | WCVI Hatchery | WCVI Natural | St. of Georgia Upper | St. of Georgia Lwr Nat | St. of Georgia Lwr Hat | Nooksack Fall | Pgt Sd Fing | Pgt Sd NatF | Pgt Sd Year | Nooksack Spring | Skagit Wild | AI Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | 0.03 | 0.12 | 0.06 | 0.00 | 0.05 | 0.07 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.96 |
| 1980 | 0.03 | 0.13 | 0.05 | 0.00 | 0.11 | 0.15 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.02 |
| 1981 | 0.04 | 0.13 | 0.04 | 0.00 | 0.08 | 0.12 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 |
| 1982 | 0.04 | 0.14 | 0.03 | 0.00 | 0.19 | 0.21 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.09 |
| 1983 | 0.05 | 0.16 | 0.04 | 0.00 | 0.31 | 0.15 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.26 |
| 1984 | 0.06 | 0.19 | 0.05 | 0.00 | 0.30 | 0.11 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.45 |
| 1985 | 0.06 | 0.20 | 0.06 | 0.00 | 0.16 | 0.06 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.31 |
| 1986 | 0.07 | 0.22 | 0.07 | 0.00 | 0.14 | 0.05 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.50 |
| 1987 | 0.07 | 0.23 | 0.07 | 0.00 | 0.09 | 0.03 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.73 |
| 1988 | 0.06 | 0.25 | 0.07 | 0.00 | 0.21 | 0.06 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.11 |
| 1989 | 0.04 | 0.26 | 0.06 | 0.00 | 0.26 | 0.06 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.78 |
| 1990 | 0.03 | 0.26 | 0.06 | 0.00 | 0.41 | 0.09 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.81 |
| 1991 | 0.03 | 0.27 | 0.06 | 0.00 | 0.55 | 0.12 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.75 |
| 1992 | 0.03 | 0.26 | 0.06 | 0.00 | 0.55 | 0.13 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.66 |
| 1993 | 0.04 | 0.24 | 0.06 | 0.00 | 0.51 | 0.12 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.65 |
| 1994 | 0.03 | 0.22 | 0.06 | 0.00 | 0.38 | 0.09 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.51 |
| 1995 | 0.03 | 0.23 | 0.07 | 0.00 | 0.16 | 0.04 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.07 |
| 1996 | 0.03 | 0.23 | 0.08 | 0.00 | 0.07 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.96 |
| 1997 | 0.03 | 0.24 | 0.09 | 0.00 | 0.19 | 0.05 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.25 |
| 1998 | 0.04 | 0.23 | 0.08 | 0.00 | 0.29 | 0.07 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.19 |
| 1999 | 0.05 | 0.24 | 0.06 | 0.00 | 0.15 | 0.03 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.10 |
| 2000 | 0.05 | 0.26 | 0.06 | 0.00 | 0.05 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.98 |
| 2001 | 0.05 | 0.26 | 0.08 | 0.00 | 0.08 | 0.01 | 0.06 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.18 |
| 2002 | 0.05 | 0.25 | 0.09 | 0.00 | 0.24 | 0.03 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.78 |
| 2003 | 0.04 | 0.25 | 0.10 | 0.00 | 0.36 | 0.04 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.22 |
| 2004 | 0.04 | 0.25 | 0.09 | 0.00 | 0.37 | 0.03 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.04 |
| 2005 | 0.04 | 0.24 | 0.08 | 0.00 | 0.26 | 0.02 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.81 |
| 2006 | 0.05 | 0.23 | 0.09 | 0.00 | 0.24 | 0.03 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.51 |
| 2007 | 0.05 | 0.21 | 0.08 | 0.00 | 0.24 | 0.03 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.15 |
| 2008 | 0.03 | 0.19 | 0.07 | 0.00 | 0.13 | 0.02 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.90 |
| 2009 | 0.03 | 0.18 | 0.08 | 0.00 | 0.10 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.04 |
| 2010 | 0.03 | 0.17 | 0.09 | 0.00 | 0.12 | 0.02 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.14 |
| 2011 | 0.02 | 0.15 | 0.09 | 0.00 | 0.25 | 0.03 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.41 |
| 2012 | 0.01 | 0.15 | 0.07 | 0.00 | 0.18 | 0.02 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.13 |
| 2013 | 0.01 | 0.15 | 0.07 | 0.00 | 0.18 | 0.02 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.63 |

-continued-

*Table H1. Page 2 of 2 (stock groups 16–30).*

| Year | Stillaguamish Wild | Snohomish Wild | WA Coastal Hat | UpRiver Brights | Spring Creek Hat | Lwr Bonneville Hat | Fall Cowlitz Hat | Lewis R Wild | Willamette R | Spr Cowlitz Hat | Col R Summer | Oregon Coast | WA Coastal Wild | Lyons Ferry | Mid-Col R Brights | AI Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | 0.00 | 0.00 | 0.03 | 0.18 | 0.00 | 0.00 | 0.03 | 0.02 | 0.02 | 0.00 | 0.04 | 0.23 | 0.03 | 0.00 | 0.00 | 0.96 |
| 1980 | 0.00 | 0.00 | 0.03 | 0.14 | 0.00 | 0.00 | 0.03 | 0.02 | 0.03 | 0.00 | 0.04 | 0.17 | 0.04 | 0.00 | 0.00 | 1.02 |
| 1981 | 0.00 | 0.00 | 0.02 | 0.10 | 0.00 | 0.00 | 0.03 | 0.02 | 0.03 | 0.01 | 0.03 | 0.16 | 0.04 | 0.00 | 0.01 | 0.92 |
| 1982 | 0.00 | 0.00 | 0.02 | 0.06 | 0.00 | 0.00 | 0.03 | 0.01 | 0.03 | 0.00 | 0.02 | 0.19 | 0.03 | 0.00 | 0.01 | 1.09 |
| 1983 | 0.00 | 0.00 | 0.02 | 0.08 | 0.00 | 0.00 | 0.03 | 0.01 | 0.04 | 0.00 | 0.02 | 0.24 | 0.03 | 0.00 | 0.02 | 1.26 |
| 1984 | 0.00 | 0.00 | 0.02 | 0.20 | 0.00 | 0.00 | 0.03 | 0.01 | 0.04 | 0.00 | 0.03 | 0.33 | 0.03 | 0.00 | 0.02 | 1.45 |
| 1985 | 0.00 | 0.00 | 0.02 | 0.23 | 0.00 | 0.00 | 0.03 | 0.01 | 0.03 | 0.00 | 0.02 | 0.31 | 0.04 | 0.00 | 0.01 | 1.31 |
| 1986 | 0.00 | 0.00 | 0.02 | 0.33 | 0.00 | 0.00 | 0.03 | 0.01 | 0.04 | 0.00 | 0.03 | 0.35 | 0.05 | 0.00 | 0.02 | 1.50 |
| 1987 | 0.00 | 0.00 | 0.04 | 0.48 | 0.00 | 0.00 | 0.03 | 0.02 | 0.05 | 0.01 | 0.03 | 0.40 | 0.06 | 0.00 | 0.07 | 1.73 |
| 1988 | 0.00 | 0.00 | 0.05 | 0.51 | 0.00 | 0.00 | 0.14 | 0.03 | 0.06 | 0.00 | 0.03 | 0.37 | 0.07 | 0.00 | 0.13 | 2.11 |
| 1989 | 0.00 | 0.00 | 0.06 | 0.32 | 0.00 | 0.00 | 0.05 | 0.03 | 0.06 | 0.00 | 0.03 | 0.29 | 0.08 | 0.00 | 0.12 | 1.78 |
| 1990 | 0.00 | 0.00 | 0.05 | 0.24 | 0.00 | 0.00 | 0.02 | 0.02 | 0.07 | 0.00 | 0.02 | 0.31 | 0.07 | 0.00 | 0.08 | 1.81 |
| 1991 | 0.00 | 0.00 | 0.05 | 0.12 | 0.00 | 0.00 | 0.01 | 0.01 | 0.05 | 0.00 | 0.02 | 0.29 | 0.06 | 0.00 | 0.05 | 1.75 |
| 1992 | 0.00 | 0.00 | 0.05 | 0.10 | 0.00 | 0.00 | 0.02 | 0.01 | 0.03 | 0.00 | 0.02 | 0.26 | 0.05 | 0.00 | 0.04 | 1.66 |
| 1993 | 0.00 | 0.00 | 0.05 | 0.18 | 0.00 | 0.00 | 0.01 | 0.01 | 0.03 | 0.00 | 0.02 | 0.25 | 0.05 | 0.00 | 0.05 | 1.65 |
| 1994 | 0.00 | 0.00 | 0.05 | 0.21 | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 | 0.00 | 0.02 | 0.28 | 0.05 | 0.00 | 0.05 | 1.51 |
| 1995 | 0.00 | 0.00 | 0.04 | 0.12 | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 | 0.00 | 0.01 | 0.21 | 0.04 | 0.00 | 0.04 | 1.07 |
| 1996 | 0.00 | 0.00 | 0.04 | 0.13 | 0.00 | 0.00 | 0.02 | 0.01 | 0.02 | 0.00 | 0.02 | 0.18 | 0.04 | 0.00 | 0.05 | 0.96 |
| 1997 | 0.00 | 0.00 | 0.03 | 0.18 | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 | 0.00 | 0.02 | 0.20 | 0.04 | 0.00 | 0.09 | 1.25 |
| 1998 | 0.00 | 0.00 | 0.02 | 0.12 | 0.00 | 0.00 | 0.00 | 0.01 | 0.02 | 0.00 | 0.02 | 0.15 | 0.04 | 0.00 | 0.06 | 1.19 |
| 1999 | 0.00 | 0.00 | 0.02 | 0.21 | 0.00 | 0.00 | 0.01 | 0.00 | 0.02 | 0.00 | 0.02 | 0.13 | 0.03 | 0.00 | 0.06 | 1.10 |
| 2000 | 0.00 | 0.00 | 0.02 | 0.18 | 0.00 | 0.00 | 0.01 | 0.01 | 0.03 | 0.00 | 0.04 | 0.13 | 0.02 | 0.00 | 0.05 | 0.98 |
| 2001 | 0.00 | 0.00 | 0.02 | 0.20 | 0.00 | 0.00 | 0.01 | 0.01 | 0.03 | 0.00 | 0.07 | 0.19 | 0.03 | 0.00 | 0.07 | 1.18 |
| 2002 | 0.00 | 0.00 | 0.03 | 0.33 | 0.00 | 0.00 | 0.02 | 0.02 | 0.07 | 0.00 | 0.10 | 0.27 | 0.03 | 0.00 | 0.16 | 1.78 |
| 2003 | 0.00 | 0.00 | 0.03 | 0.50 | 0.00 | 0.00 | 0.05 | 0.02 | 0.05 | 0.00 | 0.09 | 0.36 | 0.04 | 0.00 | 0.22 | 2.22 |
| 2004 | 0.00 | 0.00 | 0.03 | 0.38 | 0.00 | 0.00 | 0.03 | 0.02 | 0.06 | 0.00 | 0.08 | 0.38 | 0.04 | 0.00 | 0.15 | 2.04 |
| 2005 | 0.00 | 0.00 | 0.04 | 0.39 | 0.00 | 0.00 | 0.03 | 0.01 | 0.02 | 0.00 | 0.09 | 0.32 | 0.04 | 0.00 | 0.13 | 1.81 |
| 2006 | 0.00 | 0.00 | 0.04 | 0.26 | 0.00 | 0.00 | 0.02 | 0.02 | 0.03 | 0.00 | 0.08 | 0.19 | 0.04 | 0.00 | 0.11 | 1.51 |
| 2007 | 0.00 | 0.00 | 0.03 | 0.12 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.07 | 0.12 | 0.03 | 0.00 | 0.08 | 1.15 |
| 2008 | 0.00 | 0.00 | 0.03 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.06 | 0.06 | 0.03 | 0.00 | 0.08 | 0.90 |
| 2009 | 0.00 | 0.00 | 0.03 | 0.22 | 0.00 | 0.00 | 0.02 | 0.01 | 0.02 | 0.00 | 0.08 | 0.08 | 0.03 | 0.00 | 0.11 | 1.04 |
| 2010 | 0.00 | 0.00 | 0.03 | 0.23 | 0.00 | 0.00 | 0.01 | 0.01 | 0.05 | 0.00 | 0.09 | 0.11 | 0.03 | 0.00 | 0.09 | 1.14 |
| 2011 | 0.00 | 0.00 | 0.03 | 0.31 | 0.00 | 0.00 | 0.04 | 0.01 | 0.04 | 0.00 | 0.09 | 0.13 | 0.03 | 0.01 | 0.12 | 1.41 |
| 2012 | 0.00 | 0.00 | 0.03 | 0.21 | 0.00 | 0.00 | 0.01 | 0.01 | 0.03 | 0.00 | 0.08 | 0.12 | 0.03 | 0.01 | 0.11 | 1.13 |
| 2013 | 0.00 | 0.00 | 0.03 | 0.53 | 0.00 | 0.00 | 0.02 | 0.01 | 0.02 | 0.00 | 0.08 | 0.16 | 0.03 | 0.01 | 0.24 | 1.63 |

*Appendix H2. Abundance indices (AIs) for the Northern BC troll fishery by stock and year (stock groups 1–15 this page; 16–30 on following page), from CLB 1402. Numbers shown represent the portion of the AI total estimated for each model stock; the summation across all 30 stock groups equals the AI total for each calendar year.*

| Year | Alaska South SE | North/Central | Fraser Early | Fraser Late | WCVI Hatchery | WCVI Natural | St. of Georgia Upper | St. of Georgia Lwr Nat | St. of Georgia Lwr Hat | Nooksack Fall | Pgt Sd Fing | Pgt Sd NatF | Pgt Sd Year | Nooksack Spring | Skagit Wild | AI Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | 0.00 | 0.08 | 0.07 | 0.01 | 0.04 | 0.05 | 0.06 | 0.02 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.01 | 1.04 |
| 1980 | 0.00 | 0.09 | 0.06 | 0.01 | 0.05 | 0.08 | 0.05 | 0.02 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.98 |
| 1981 | 0.00 | 0.09 | 0.05 | 0.01 | 0.06 | 0.08 | 0.06 | 0.01 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.94 |
| 1982 | 0.00 | 0.10 | 0.04 | 0.01 | 0.12 | 0.11 | 0.05 | 0.01 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 1.04 |
| 1983 | 0.00 | 0.11 | 0.05 | 0.01 | 0.17 | 0.08 | 0.04 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 1.18 |
| 1984 | 0.00 | 0.12 | 0.06 | 0.02 | 0.15 | 0.05 | 0.05 | 0.01 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 1.36 |
| 1985 | 0.00 | 0.13 | 0.07 | 0.02 | 0.09 | 0.03 | 0.06 | 0.01 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 1.29 |
| 1986 | 0.00 | 0.14 | 0.09 | 0.01 | 0.07 | 0.02 | 0.06 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 1.46 |
| 1987 | 0.00 | 0.15 | 0.09 | 0.01 | 0.07 | 0.02 | 0.06 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.73 |
| 1988 | 0.00 | 0.16 | 0.08 | 0.01 | 0.12 | 0.03 | 0.05 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 1.82 |
| 1989 | 0.00 | 0.17 | 0.08 | 0.01 | 0.16 | 0.04 | 0.06 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.64 |
| 1990 | 0.00 | 0.18 | 0.08 | 0.01 | 0.24 | 0.05 | 0.05 | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 1.60 |
| 1991 | 0.00 | 0.18 | 0.07 | 0.01 | 0.30 | 0.07 | 0.05 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.51 |
| 1992 | 0.00 | 0.17 | 0.07 | 0.01 | 0.31 | 0.07 | 0.03 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.40 |
| 1993 | 0.00 | 0.16 | 0.07 | 0.01 | 0.27 | 0.07 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.40 |
| 1994 | 0.00 | 0.16 | 0.08 | 0.00 | 0.18 | 0.04 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.22 |
| 1995 | 0.00 | 0.15 | 0.08 | 0.00 | 0.08 | 0.02 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.98 |
| 1996 | 0.00 | 0.15 | 0.09 | 0.01 | 0.06 | 0.02 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.94 |
| 1997 | 0.00 | 0.16 | 0.11 | 0.01 | 0.12 | 0.03 | 0.03 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.11 |
| 1998 | 0.00 | 0.16 | 0.10 | 0.01 | 0.14 | 0.03 | 0.04 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.99 |
| 1999 | 0.00 | 0.16 | 0.09 | 0.01 | 0.08 | 0.02 | 0.05 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.95 |
| 2000 | 0.00 | 0.17 | 0.08 | 0.01 | 0.03 | 0.00 | 0.06 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.94 |
| 2001 | 0.00 | 0.18 | 0.09 | 0.01 | 0.06 | 0.01 | 0.07 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.22 |
| 2002 | 0.00 | 0.17 | 0.11 | 0.01 | 0.15 | 0.02 | 0.08 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.71 |
| 2003 | 0.00 | 0.17 | 0.12 | 0.01 | 0.19 | 0.02 | 0.08 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 1.92 |
| 2004 | 0.00 | 0.18 | 0.11 | 0.01 | 0.20 | 0.02 | 0.08 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 1.78 |
| 2005 | 0.00 | 0.17 | 0.10 | 0.01 | 0.14 | 0.01 | 0.08 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 1.54 |
| 2006 | 0.00 | 0.16 | 0.11 | 0.01 | 0.14 | 0.02 | 0.08 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 1.23 |
| 2007 | 0.00 | 0.15 | 0.10 | 0.00 | 0.12 | 0.02 | 0.06 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.93 |
| 2008 | 0.00 | 0.13 | 0.09 | 0.00 | 0.07 | 0.01 | 0.05 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.82 |
| 2009 | 0.00 | 0.12 | 0.10 | 0.00 | 0.06 | 0.01 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.95 |
| 2010 | 0.00 | 0.12 | 0.11 | 0.01 | 0.09 | 0.01 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.10 |
| 2011 | 0.00 | 0.11 | 0.11 | 0.01 | 0.12 | 0.02 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.19 |
| 2012 | 0.00 | 0.10 | 0.09 | 0.00 | 0.10 | 0.01 | 0.06 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 1.07 |
| 2013 | 0.00 | 0.10 | 0.09 | 0.01 | 0.12 | 0.01 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.51 |

-continued-

*Table H2. Page 2 of 2 (stock groups 16–30).*

| Year | Stillaguamish Wild | Snohomish Wild | WA Coastal Hat | UpRiver Brights | Spring Creek Hat | Lwr Bonneville Hat | Fall Cowlitz Hat | Lewis R Wild | Willamette R | Spr Cowlitz Hat | Col R Summer | Oregon Coast | WA Coastal Wild | Lyons Ferry | Mid-Col R Brights | AI Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | 0.00 | 0.01 | 0.04 | 0.12 | 0.00 | 0.00 | 0.02 | 0.01 | 0.06 | 0.01 | 0.02 | 0.30 | 0.05 | 0.00 | 0.00 | 1.04 |
| 1980 | 0.00 | 0.01 | 0.04 | 0.09 | 0.00 | 0.00 | 0.02 | 0.01 | 0.06 | 0.01 | 0.02 | 0.25 | 0.06 | 0.00 | 0.00 | 0.98 |
| 1981 | 0.00 | 0.00 | 0.04 | 0.06 | 0.00 | 0.00 | 0.02 | 0.01 | 0.07 | 0.01 | 0.02 | 0.23 | 0.06 | 0.00 | 0.01 | 0.94 |
| 1982 | 0.00 | 0.00 | 0.03 | 0.04 | 0.00 | 0.00 | 0.02 | 0.01 | 0.08 | 0.01 | 0.02 | 0.29 | 0.05 | 0.00 | 0.01 | 1.04 |
| 1983 | 0.00 | 0.00 | 0.03 | 0.07 | 0.00 | 0.00 | 0.02 | 0.01 | 0.09 | 0.01 | 0.02 | 0.37 | 0.05 | 0.00 | 0.01 | 1.18 |
| 1984 | 0.00 | 0.00 | 0.03 | 0.14 | 0.00 | 0.00 | 0.02 | 0.01 | 0.08 | 0.01 | 0.02 | 0.47 | 0.06 | 0.00 | 0.01 | 1.36 |
| 1985 | 0.00 | 0.00 | 0.03 | 0.16 | 0.00 | 0.00 | 0.02 | 0.01 | 0.08 | 0.00 | 0.02 | 0.44 | 0.06 | 0.00 | 0.01 | 1.29 |
| 1986 | 0.00 | 0.00 | 0.05 | 0.24 | 0.00 | 0.00 | 0.02 | 0.01 | 0.10 | 0.01 | 0.02 | 0.48 | 0.08 | 0.00 | 0.02 | 1.46 |
| 1987 | 0.00 | 0.00 | 0.07 | 0.33 | 0.00 | 0.00 | 0.03 | 0.02 | 0.13 | 0.01 | 0.02 | 0.53 | 0.10 | 0.00 | 0.05 | 1.73 |
| 1988 | 0.00 | 0.00 | 0.09 | 0.32 | 0.00 | 0.00 | 0.08 | 0.02 | 0.14 | 0.01 | 0.02 | 0.46 | 0.12 | 0.00 | 0.09 | 1.82 |
| 1989 | 0.00 | 0.00 | 0.09 | 0.20 | 0.00 | 0.00 | 0.02 | 0.01 | 0.14 | 0.01 | 0.02 | 0.39 | 0.12 | 0.00 | 0.07 | 1.64 |
| 1990 | 0.00 | 0.00 | 0.08 | 0.15 | 0.00 | 0.00 | 0.01 | 0.01 | 0.14 | 0.00 | 0.01 | 0.39 | 0.11 | 0.00 | 0.05 | 1.60 |
| 1991 | 0.00 | 0.00 | 0.08 | 0.08 | 0.00 | 0.00 | 0.01 | 0.01 | 0.10 | 0.00 | 0.01 | 0.37 | 0.10 | 0.00 | 0.03 | 1.51 |
| 1992 | 0.00 | 0.00 | 0.08 | 0.07 | 0.00 | 0.00 | 0.01 | 0.01 | 0.07 | 0.01 | 0.01 | 0.33 | 0.08 | 0.00 | 0.03 | 1.40 |
| 1993 | 0.00 | 0.00 | 0.08 | 0.12 | 0.00 | 0.00 | 0.01 | 0.00 | 0.06 | 0.00 | 0.01 | 0.36 | 0.08 | 0.00 | 0.03 | 1.40 |
| 1994 | 0.00 | 0.00 | 0.07 | 0.13 | 0.00 | 0.00 | 0.01 | 0.01 | 0.05 | 0.00 | 0.01 | 0.33 | 0.07 | 0.00 | 0.03 | 1.22 |
| 1995 | 0.00 | 0.00 | 0.07 | 0.08 | 0.00 | 0.00 | 0.01 | 0.01 | 0.04 | 0.00 | 0.01 | 0.29 | 0.07 | 0.00 | 0.03 | 0.98 |
| 1996 | 0.00 | 0.00 | 0.06 | 0.09 | 0.00 | 0.00 | 0.01 | 0.01 | 0.04 | 0.00 | 0.01 | 0.24 | 0.07 | 0.00 | 0.04 | 0.94 |
| 1997 | 0.00 | 0.00 | 0.05 | 0.12 | 0.00 | 0.00 | 0.01 | 0.00 | 0.05 | 0.00 | 0.01 | 0.25 | 0.06 | 0.00 | 0.06 | 1.11 |
| 1998 | 0.00 | 0.00 | 0.03 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.02 | 0.20 | 0.05 | 0.00 | 0.04 | 0.99 |
| 1999 | 0.00 | 0.00 | 0.03 | 0.14 | 0.00 | 0.00 | 0.01 | 0.00 | 0.06 | 0.00 | 0.02 | 0.17 | 0.04 | 0.00 | 0.04 | 0.95 |
| 2000 | 0.00 | 0.00 | 0.03 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | 0.00 | 0.04 | 0.23 | 0.04 | 0.00 | 0.03 | 0.94 |
| 2001 | 0.00 | 0.00 | 0.03 | 0.15 | 0.00 | 0.00 | 0.01 | 0.01 | 0.11 | 0.00 | 0.05 | 0.30 | 0.04 | 0.00 | 0.05 | 1.22 |
| 2002 | 0.00 | 0.00 | 0.04 | 0.24 | 0.00 | 0.00 | 0.02 | 0.01 | 0.15 | 0.00 | 0.06 | 0.44 | 0.05 | 0.00 | 0.11 | 1.71 |
| 2003 | 0.00 | 0.00 | 0.05 | 0.32 | 0.00 | 0.00 | 0.03 | 0.01 | 0.13 | 0.01 | 0.06 | 0.50 | 0.06 | 0.00 | 0.14 | 1.92 |
| 2004 | 0.00 | 0.00 | 0.06 | 0.25 | 0.00 | 0.00 | 0.01 | 0.01 | 0.10 | 0.01 | 0.06 | 0.48 | 0.07 | 0.00 | 0.10 | 1.78 |
| 2005 | 0.00 | 0.00 | 0.06 | 0.25 | 0.00 | 0.00 | 0.02 | 0.01 | 0.06 | 0.00 | 0.05 | 0.39 | 0.07 | 0.01 | 0.08 | 1.54 |
| 2006 | 0.00 | 0.00 | 0.06 | 0.16 | 0.00 | 0.00 | 0.01 | 0.00 | 0.05 | 0.01 | 0.05 | 0.22 | 0.06 | 0.01 | 0.07 | 1.23 |
| 2007 | 0.00 | 0.00 | 0.05 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.05 | 0.13 | 0.05 | 0.01 | 0.05 | 0.93 |
| 2008 | 0.00 | 0.00 | 0.04 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.05 | 0.09 | 0.04 | 0.01 | 0.06 | 0.82 |
| 2009 | 0.00 | 0.00 | 0.05 | 0.15 | 0.00 | 0.00 | 0.01 | 0.00 | 0.07 | 0.00 | 0.05 | 0.12 | 0.04 | 0.01 | 0.07 | 0.95 |
| 2010 | 0.00 | 0.00 | 0.05 | 0.16 | 0.00 | 0.00 | 0.01 | 0.00 | 0.10 | 0.00 | 0.06 | 0.18 | 0.05 | 0.01 | 0.06 | 1.10 |
| 2011 | 0.00 | 0.00 | 0.05 | 0.20 | 0.00 | 0.00 | 0.02 | 0.01 | 0.07 | 0.00 | 0.06 | 0.18 | 0.05 | 0.01 | 0.08 | 1.19 |
| 2012 | 0.00 | 0.00 | 0.05 | 0.16 | 0.00 | 0.00 | 0.01 | 0.01 | 0.06 | 0.00 | 0.06 | 0.19 | 0.05 | 0.01 | 0.08 | 1.07 |
| 2013 | 0.00 | 0.00 | 0.05 | 0.41 | 0.00 | 0.00 | 0.01 | 0.01 | 0.06 | 0.00 | 0.06 | 0.23 | 0.05 | 0.01 | 0.19 | 1.51 |

*Appendix H3. Abundance indices (AIs) for the WCVI troll fishery by stock and year stock groups 1–15 this page; 16–30 on following page), from CLB 1402. Numbers shown represent the portion of the AI total estimated for each model stock; the summation across all 30 stock groups equals the AI total for each calendar year.*

| Year | Alaska South SE | North/Central | Fraser Early | Fraser Late | WCVI Hatchery | WCVI Natural | St. of Georgia Upper | St. of Georgia Lwr Nat | St. of Georgia Lwr Hat | Nooksack Fall | Pgt Sd Fing | Pgt Sd NatF | Pgt Sd Year | Nooksack Spring | Skagit Wild | AI Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | 0.00 | 0.00 | 0.01 | 0.28 | 0.01 | 0.02 | 0.00 | 0.01 | 0.01 | 0.08 | 0.04 | 0.03 | 0.02 | 0.00 | 0.02 | 1.11 |
| 1980 | 0.00 | 0.00 | 0.01 | 0.20 | 0.02 | 0.02 | 0.00 | 0.01 | 0.01 | 0.09 | 0.05 | 0.02 | 0.02 | 0.00 | 0.02 | 0.97 |
| 1981 | 0.00 | 0.00 | 0.00 | 0.24 | 0.02 | 0.03 | 0.00 | 0.00 | 0.01 | 0.09 | 0.05 | 0.02 | 0.02 | 0.00 | 0.02 | 0.93 |
| 1982 | 0.00 | 0.00 | 0.00 | 0.25 | 0.04 | 0.03 | 0.00 | 0.00 | 0.01 | 0.09 | 0.05 | 0.02 | 0.02 | 0.00 | 0.01 | 1.00 |
| 1983 | 0.00 | 0.00 | 0.01 | 0.21 | 0.05 | 0.02 | 0.00 | 0.00 | 0.00 | 0.10 | 0.06 | 0.03 | 0.02 | 0.00 | 0.01 | 0.90 |
| 1984 | 0.00 | 0.00 | 0.01 | 0.25 | 0.04 | 0.01 | 0.00 | 0.00 | 0.01 | 0.11 | 0.06 | 0.02 | 0.02 | 0.00 | 0.02 | 0.98 |
| 1985 | 0.00 | 0.00 | 0.01 | 0.29 | 0.03 | 0.01 | 0.00 | 0.00 | 0.01 | 0.09 | 0.05 | 0.02 | 0.01 | 0.00 | 0.01 | 0.98 |
| 1986 | 0.00 | 0.00 | 0.01 | 0.24 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.08 | 0.06 | 0.03 | 0.01 | 0.00 | 0.01 | 1.05 |
| 1987 | 0.00 | 0.00 | 0.01 | 0.12 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.06 | 0.08 | 0.03 | 0.01 | 0.00 | 0.01 | 1.21 |
| 1988 | 0.00 | 0.00 | 0.01 | 0.08 | 0.04 | 0.01 | 0.00 | 0.00 | 0.00 | 0.05 | 0.09 | 0.03 | 0.01 | 0.00 | 0.01 | 1.13 |
| 1989 | 0.00 | 0.00 | 0.01 | 0.18 | 0.05 | 0.01 | 0.00 | 0.00 | 0.00 | 0.06 | 0.10 | 0.03 | 0.02 | 0.00 | 0.01 | 0.98 |
| 1990 | 0.00 | 0.00 | 0.01 | 0.21 | 0.08 | 0.02 | 0.00 | 0.00 | 0.00 | 0.07 | 0.10 | 0.03 | 0.01 | 0.00 | 0.01 | 0.89 |
| 1991 | 0.00 | 0.00 | 0.01 | 0.16 | 0.09 | 0.02 | 0.00 | 0.00 | 0.00 | 0.04 | 0.07 | 0.03 | 0.01 | 0.00 | 0.00 | 0.77 |
| 1992 | 0.00 | 0.00 | 0.01 | 0.21 | 0.09 | 0.02 | 0.00 | 0.00 | 0.00 | 0.03 | 0.06 | 0.02 | 0.01 | 0.00 | 0.00 | 0.80 |
| 1993 | 0.00 | 0.00 | 0.01 | 0.17 | 0.08 | 0.02 | 0.00 | 0.00 | 0.00 | 0.03 | 0.06 | 0.02 | 0.01 | 0.00 | 0.00 | 0.70 |
| 1994 | 0.00 | 0.00 | 0.01 | 0.10 | 0.05 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.07 | 0.02 | 0.01 | 0.00 | 0.00 | 0.53 |
| 1995 | 0.00 | 0.00 | 0.01 | 0.05 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.08 | 0.02 | 0.01 | 0.00 | 0.00 | 0.43 |
| 1996 | 0.00 | 0.00 | 0.01 | 0.07 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.07 | 0.01 | 0.01 | 0.00 | 0.00 | 0.50 |
| 1997 | 0.00 | 0.00 | 0.01 | 0.17 | 0.04 | 0.01 | 0.00 | 0.00 | 0.00 | 0.03 | 0.07 | 0.01 | 0.01 | 0.00 | 0.01 | 0.60 |
| 1998 | 0.00 | 0.00 | 0.01 | 0.19 | 0.04 | 0.01 | 0.00 | 0.00 | 0.00 | 0.03 | 0.07 | 0.01 | 0.01 | 0.00 | 0.00 | 0.58 |
| 1999 | 0.00 | 0.00 | 0.01 | 0.11 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.08 | 0.01 | 0.01 | 0.00 | 0.01 | 0.51 |
| 2000 | 0.00 | 0.00 | 0.01 | 0.11 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.08 | 0.01 | 0.01 | 0.00 | 0.01 | 0.54 |
| 2001 | 0.00 | 0.00 | 0.01 | 0.12 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.09 | 0.02 | 0.01 | 0.00 | 0.01 | 0.85 |
| 2002 | 0.00 | 0.00 | 0.01 | 0.20 | 0.05 | 0.01 | 0.00 | 0.00 | 0.00 | 0.04 | 0.09 | 0.02 | 0.01 | 0.00 | 0.01 | 1.18 |
| 2003 | 0.00 | 0.00 | 0.01 | 0.23 | 0.06 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.09 | 0.01 | 0.01 | 0.00 | 0.01 | 1.22 |
| 2004 | 0.00 | 0.00 | 0.01 | 0.15 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.09 | 0.02 | 0.02 | 0.00 | 0.01 | 1.03 |
| 2005 | 0.00 | 0.00 | 0.01 | 0.10 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.10 | 0.01 | 0.02 | 0.00 | 0.01 | 0.85 |
| 2006 | 0.00 | 0.00 | 0.01 | 0.10 | 0.04 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.12 | 0.01 | 0.03 | 0.00 | 0.01 | 0.67 |
| 2007 | 0.00 | 0.00 | 0.01 | 0.05 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.12 | 0.02 | 0.03 | 0.00 | 0.01 | 0.52 |
| 2008 | 0.00 | 0.00 | 0.01 | 0.08 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.10 | 0.01 | 0.02 | 0.00 | 0.01 | 0.57 |
| 2009 | 0.00 | 0.00 | 0.01 | 0.07 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.09 | 0.01 | 0.02 | 0.00 | 0.01 | 0.58 |
| 2010 | 0.00 | 0.00 | 0.01 | 0.14 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.09 | 0.01 | 0.02 | 0.00 | 0.00 | 0.79 |
| 2011 | 0.00 | 0.00 | 0.01 | 0.14 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.10 | 0.01 | 0.02 | 0.00 | 0.01 | 0.82 |
| 2012 | 0.00 | 0.00 | 0.01 | 0.06 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.11 | 0.01 | 0.02 | 0.00 | 0.01 | 0.80 |
| 2013 | 0.00 | 0.00 | 0.01 | 0.08 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.11 | 0.01 | 0.02 | 0.00 | 0.01 | 1.08 |

-continued-

*Table H3. Page 2 of 2 (stock groups 16–30).*

| Year | Stillaguamish Wild | Snohomish Wild | WA Coastal Hat | UpRiver Brights | Spring Creek Hat | Lwr Bonneville Hat | Fall Cowlitz Hat | Lewis R Wild | Willamette R | Spr Cowlitz Hat | Col R Summer | Oregon Coast | WA Coastal Wild | Lyons Ferry | Mid-Col R Brights | AI Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | 0.00 | 0.01 | 0.01 | 0.06 | 0.17 | 0.13 | 0.09 | 0.01 | 0.01 | 0.01 | 0.02 | 0.04 | 0.01 | 0.00 | 0.00 | 1.11 |
| 1980 | 0.00 | 0.01 | 0.01 | 0.04 | 0.14 | 0.10 | 0.09 | 0.01 | 0.01 | 0.02 | 0.02 | 0.04 | 0.01 | 0.00 | 0.00 | 0.97 |
| 1981 | 0.00 | 0.01 | 0.01 | 0.03 | 0.12 | 0.09 | 0.08 | 0.01 | 0.02 | 0.01 | 0.02 | 0.04 | 0.01 | 0.00 | 0.01 | 0.93 |
| 1982 | 0.00 | 0.01 | 0.01 | 0.03 | 0.13 | 0.10 | 0.09 | 0.01 | 0.02 | 0.01 | 0.01 | 0.04 | 0.01 | 0.00 | 0.01 | 1.00 |
| 1983 | 0.00 | 0.01 | 0.01 | 0.05 | 0.04 | 0.09 | 0.08 | 0.01 | 0.02 | 0.01 | 0.02 | 0.06 | 0.01 | 0.00 | 0.00 | 0.90 |
| 1984 | 0.00 | 0.01 | 0.01 | 0.07 | 0.05 | 0.08 | 0.07 | 0.01 | 0.02 | 0.01 | 0.02 | 0.07 | 0.01 | 0.00 | 0.00 | 0.98 |
| 1985 | 0.00 | 0.00 | 0.01 | 0.10 | 0.03 | 0.07 | 0.08 | 0.01 | 0.02 | 0.01 | 0.01 | 0.07 | 0.01 | 0.00 | 0.01 | 0.98 |
| 1986 | 0.00 | 0.00 | 0.01 | 0.14 | 0.02 | 0.12 | 0.09 | 0.01 | 0.02 | 0.01 | 0.02 | 0.07 | 0.02 | 0.00 | 0.04 | 1.05 |
| 1987 | 0.00 | 0.00 | 0.02 | 0.18 | 0.01 | 0.25 | 0.18 | 0.02 | 0.03 | 0.01 | 0.02 | 0.07 | 0.02 | 0.00 | 0.04 | 1.21 |
| 1988 | 0.00 | 0.00 | 0.02 | 0.14 | 0.03 | 0.12 | 0.28 | 0.02 | 0.03 | 0.01 | 0.02 | 0.07 | 0.03 | 0.00 | 0.03 | 1.13 |
| 1989 | 0.00 | 0.00 | 0.02 | 0.09 | 0.04 | 0.05 | 0.13 | 0.01 | 0.03 | 0.01 | 0.01 | 0.06 | 0.03 | 0.00 | 0.02 | 0.98 |
| 1990 | 0.00 | 0.00 | 0.02 | 0.06 | 0.04 | 0.03 | 0.06 | 0.01 | 0.03 | 0.01 | 0.01 | 0.06 | 0.02 | 0.00 | 0.01 | 0.89 |
| 1991 | 0.00 | 0.00 | 0.02 | 0.04 | 0.05 | 0.05 | 0.04 | 0.01 | 0.02 | 0.01 | 0.01 | 0.05 | 0.02 | 0.00 | 0.02 | 0.77 |
| 1992 | 0.00 | 0.00 | 0.02 | 0.05 | 0.04 | 0.06 | 0.05 | 0.01 | 0.01 | 0.01 | 0.01 | 0.05 | 0.02 | 0.00 | 0.02 | 0.80 |
| 1993 | 0.00 | 0.00 | 0.02 | 0.06 | 0.02 | 0.03 | 0.04 | 0.00 | 0.01 | 0.00 | 0.01 | 0.05 | 0.02 | 0.00 | 0.01 | 0.70 |
| 1994 | 0.00 | 0.00 | 0.01 | 0.05 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.00 | 0.01 | 0.05 | 0.01 | 0.00 | 0.01 | 0.53 |
| 1995 | 0.00 | 0.00 | 0.01 | 0.04 | 0.02 | 0.02 | 0.03 | 0.00 | 0.01 | 0.00 | 0.01 | 0.04 | 0.01 | 0.00 | 0.02 | 0.43 |
| 1996 | 0.00 | 0.00 | 0.01 | 0.06 | 0.03 | 0.02 | 0.04 | 0.00 | 0.01 | 0.00 | 0.01 | 0.04 | 0.01 | 0.00 | 0.03 | 0.50 |
| 1997 | 0.00 | 0.00 | 0.01 | 0.05 | 0.02 | 0.02 | 0.03 | 0.00 | 0.01 | 0.00 | 0.01 | 0.03 | 0.01 | 0.00 | 0.02 | 0.60 |
| 1998 | 0.00 | 0.00 | 0.01 | 0.06 | 0.02 | 0.02 | 0.02 | 0.00 | 0.01 | 0.00 | 0.01 | 0.03 | 0.01 | 0.00 | 0.02 | 0.58 |
| 1999 | 0.00 | 0.00 | 0.01 | 0.07 | 0.03 | 0.01 | 0.02 | 0.00 | 0.01 | 0.00 | 0.01 | 0.03 | 0.01 | 0.00 | 0.02 | 0.51 |
| 2000 | 0.00 | 0.00 | 0.01 | 0.06 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.00 | 0.03 | 0.03 | 0.01 | 0.00 | 0.04 | 0.54 |
| 2001 | 0.00 | 0.00 | 0.01 | 0.09 | 0.10 | 0.06 | 0.04 | 0.01 | 0.03 | 0.00 | 0.04 | 0.05 | 0.01 | 0.01 | 0.06 | 0.85 |
| 2002 | 0.00 | 0.00 | 0.01 | 0.14 | 0.18 | 0.08 | 0.07 | 0.01 | 0.03 | 0.01 | 0.06 | 0.07 | 0.01 | 0.01 | 0.06 | 1.18 |
| 2003 | 0.00 | 0.00 | 0.01 | 0.15 | 0.19 | 0.06 | 0.11 | 0.01 | 0.03 | 0.01 | 0.05 | 0.08 | 0.01 | 0.01 | 0.04 | 1.22 |
| 2004 | 0.00 | 0.00 | 0.01 | 0.13 | 0.17 | 0.04 | 0.09 | 0.01 | 0.02 | 0.01 | 0.05 | 0.07 | 0.01 | 0.01 | 0.04 | 1.03 |
| 2005 | 0.00 | 0.00 | 0.01 | 0.12 | 0.10 | 0.02 | 0.08 | 0.01 | 0.01 | 0.01 | 0.05 | 0.05 | 0.01 | 0.01 | 0.03 | 0.85 |
| 2006 | 0.00 | 0.00 | 0.01 | 0.07 | 0.03 | 0.01 | 0.04 | 0.00 | 0.01 | 0.01 | 0.04 | 0.03 | 0.01 | 0.01 | 0.03 | 0.67 |
| 2007 | 0.00 | 0.00 | 0.01 | 0.04 | 0.02 | 0.01 | 0.02 | 0.00 | 0.01 | 0.00 | 0.04 | 0.02 | 0.01 | 0.01 | 0.03 | 0.52 |
| 2008 | 0.00 | 0.00 | 0.01 | 0.07 | 0.06 | 0.02 | 0.02 | 0.00 | 0.01 | 0.00 | 0.04 | 0.01 | 0.01 | 0.01 | 0.03 | 0.57 |
| 2009 | 0.00 | 0.00 | 0.01 | 0.08 | 0.04 | 0.01 | 0.04 | 0.00 | 0.02 | 0.00 | 0.05 | 0.02 | 0.01 | 0.01 | 0.03 | 0.58 |
| 2010 | 0.00 | 0.00 | 0.01 | 0.10 | 0.09 | 0.02 | 0.05 | 0.00 | 0.02 | 0.00 | 0.05 | 0.03 | 0.01 | 0.01 | 0.04 | 0.79 |
| 2011 | 0.00 | 0.00 | 0.01 | 0.10 | 0.06 | 0.02 | 0.09 | 0.01 | 0.01 | 0.00 | 0.05 | 0.03 | 0.01 | 0.02 | 0.05 | 0.82 |
| 2012 | 0.00 | 0.00 | 0.01 | 0.12 | 0.06 | 0.03 | 0.04 | 0.01 | 0.01 | 0.00 | 0.04 | 0.03 | 0.01 | 0.02 | 0.13 | 0.80 |
| 2013 | 0.00 | 0.00 | 0.01 | 0.29 | 0.07 | 0.01 | 0.05 | 0.01 | 0.01 | 0.00 | 0.05 | 0.04 | 0.01 | 0.03 | 0.18 | 1.08 |

# APPENDIX I: FISHERY EXPLOITATION RATE INDICES BY STOCK, AGE AND FISHERY, BASED ON CWT DATA

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*Appendix I1. Alaska troll Stratified Proportion Fishery Index (SPFI) values as landed catch, based on CWT data.*

| YEAR | SPFI | WIN/SPR | JUNE OUT | JUNE IN | JULY OUT | JULY IN | FALL |
|---|---|---|---|---|---|---|---|
| 1979 | 0.81 | 1.13 | 1.08 | 0.51 | 0.77 | 0.38 | 0.77 |
| 1980 | 1.29 | 0.64 | 0.94 | 1.46 | 1.56 | 1.85 | 1.56 |
| 1981 | 1.10 | 1.22 | 1.07 | 0.91 | 1.06 | 0.86 | 1.06 |
| 1982 | 0.80 | 1.01 | 0.91 | 1.12 | 0.61 | 0.91 | 0.61 |
| 1983 | 0.86 | 1.03 | 0.57 | 0.67 | 1.23 | 0.80 | 1.23 |
| 1984 | 0.61 | 0.36 | 0.92 | 1.14 | 0.52 | 0.27 | 0.52 |
| 1985 | 0.67 | 0.45 | 0.59 | 0.88 | 0.82 | 0.70 | 0.82 |
| 1986 | 0.45 | 0.43 | 0.15 | 0.42 | 1.23 | 0.52 | 1.23 |
| 1987 | 0.47 | 0.59 | 0.17 | 0.59 | 0.62 | 1.28 | 0.62 |
| 1988 | 0.41 | 1.37 | 0.00 | 0.15 | 0.64 | 1.14 | 0.64 |
| 1989 | 0.50 | 0.83 | 0.20 | 0.46 | 0.53 | 0.49 | 0.53 |
| 1990 | 0.69 | 0.64 | 0.11 | 0.93 | 1.12 | 1.06 | 1.12 |
| 1991 | 0.59 | 1.35 | 0.22 | 0.95 | 0.76 | 0.49 | 0.76 |
| 1992 | 0.38 | 1.03 | 0.06 | 0.53 | 0.39 | 0.21 | 0.39 |
| 1993 | 0.46 | 0.74 | 0.02 | 0.29 | 0.89 | 0.24 | 0.89 |
| 1994 | 0.40 | 0.66 | 0.04 | 0.13 | 0.65 | 0.15 | 0.65 |
| 1995 | 0.48 | 0.46 | 0.05 | 0.34 | 0.76 | 0.89 | 0.76 |
| 1996 | 0.42 | 0.56 | 0.09 | 0.61 | 0.54 | 0.47 | 0.54 |
| 1997 | 0.59 | 0.63 | 0.15 | 0.61 | 1.44 | 0.08 | 1.44 |
| 1998 | 0.39 | 0.81 | 0.05 | 0.16 | 0.92 | 0.38 | 0.92 |
| 1999 | 0.57 | 0.79 | 0.11 | 0.27 | 0.96 | 0.11 | 0.96 |
| 2000 | 0.44 | 0.88 | 0.09 | 0.11 | 1.41 | 0.05 | 1.41 |
| 2001 | 0.39 | 0.57 | 0.07 | 0.15 | 0.63 | 0.12 | 0.63 |
| 2002 | 0.51 | 0.42 | 0.06 | 0.13 | 1.11 | 0.15 | 1.11 |
| 2003 | 0.46 | 0.71 | 0.06 | 0.14 | 0.85 | 0.31 | 0.85 |
| 2004 | 0.41 | 0.84 | 0.07 | 0.18 | 0.92 | 0.28 | 0.92 |
| 2005 | 0.47 | 0.93 | 0.11 | 0.23 | 1.20 | 0.40 | 1.20 |
| 2006 | 0.62 | 1.55 | 0.12 | 0.72 | 1.37 | 0.11 | 1.37 |
| 2007 | 0.61 | 1.29 | 0.14 | 0.95 | 1.17 | 0.18 | 1.17 |
| 2008 | 0.45 | 0.84 | 0.08 | 0.79 | 0.68 | 0.09 | 0.68 |
| 2009 | 0.57 | 0.72 | 0.15 | 0.35 | 1.06 | 0.15 | 1.06 |
| 2010 | 0.36 | 1.15 | 0.04 | 0.28 | 0.72 | 0.09 | 0.72 |
| 2011 | 0.38 | 1.04 | 0.05 | 0.26 | 0.83 | 0.13 | 0.83 |
| 2012 | 0.60 | 1.63 | 0.09 | 0.19 | 1.05 | 0.09 | 1.05 |

| ER Stock Identifiers | | | |
|---|---|---|---|
| Alaska Southeast | Age 4 | Age 5 | Age 6 |
| Quinsam | Age 4 | Age 5 | |
| Robertson Creek | Age 3 | Age 4 | Age 5 |
| Salmon River Hatchery | Age 4 | Age 5 | |
| Columbia Upriver Brights | Age 4 | Age 5 | |
| Willamette Spring Hatchery | Age 4 | Age 5 | |

*Appendix I2. Alaska troll Stratified Proportion Fishery Index (SPFI) values as total mortality, based on CWT data.*

| YEAR | SPFI | WIN/SPR | JUNE OUT | JUNE IN | JULY OUT | JULY IN | FALL |
|---|---|---|---|---|---|---|---|
| 1979 | 0.79 | 1.09 | 1.07 | 0.50 | 0.74 | 0.38 | 0.74 |
| 1980 | 1.22 | 0.64 | 0.91 | 1.47 | 1.41 | 1.76 | 1.41 |
| 1981 | 1.10 | 1.22 | 1.10 | 0.88 | 1.07 | 0.81 | 1.07 |
| 1982 | 0.90 | 1.05 | 0.93 | 1.14 | 0.78 | 1.06 | 0.78 |
| 1983 | 0.97 | 1.00 | 0.59 | 0.72 | 1.65 | 0.73 | 1.65 |
| 1984 | 0.65 | 0.37 | 0.92 | 1.12 | 0.61 | 0.42 | 0.61 |
| 1985 | 0.77 | 0.46 | 0.57 | 0.84 | 1.07 | 0.68 | 1.07 |
| 1986 | 0.51 | 0.48 | 0.15 | 0.43 | 1.45 | 0.60 | 1.45 |
| 1987 | 0.54 | 0.60 | 0.16 | 0.54 | 0.75 | 1.68 | 0.75 |
| 1988 | 0.43 | 1.29 | 0.01 | 0.16 | 0.65 | 1.23 | 0.65 |
| 1989 | 0.56 | 0.80 | 0.20 | 0.44 | 0.61 | 0.57 | 0.61 |
| 1990 | 0.86 | 0.79 | 0.13 | 0.98 | 1.44 | 1.04 | 1.44 |
| 1991 | 0.61 | 1.27 | 0.21 | 0.88 | 0.79 | 0.62 | 0.79 |
| 1992 | 0.43 | 0.98 | 0.06 | 0.49 | 0.56 | 0.21 | 0.56 |
| 1993 | 0.51 | 0.71 | 0.02 | 0.27 | 1.04 | 0.25 | 1.04 |
| 1994 | 0.48 | 0.64 | 0.04 | 0.15 | 0.85 | 0.20 | 0.85 |
| 1995 | 0.56 | 0.47 | 0.05 | 0.35 | 0.93 | 0.91 | 0.93 |
| 1996 | 0.50 | 0.56 | 0.10 | 0.59 | 0.66 | 0.49 | 0.66 |
| 1997 | 0.58 | 0.62 | 0.15 | 0.56 | 1.38 | 0.10 | 1.38 |
| 1998 | 0.37 | 0.79 | 0.05 | 0.16 | 0.86 | 0.33 | 0.86 |
| 1999 | 0.62 | 0.78 | 0.11 | 0.26 | 1.06 | 0.15 | 1.06 |
| 2000 | 0.46 | 0.89 | 0.09 | 0.11 | 1.46 | 0.08 | 1.46 |
| 2001 | 0.40 | 0.55 | 0.07 | 0.14 | 0.66 | 0.15 | 0.66 |
| 2002 | 0.50 | 0.45 | 0.06 | 0.13 | 1.05 | 0.16 | 1.05 |
| 2003 | 0.45 | 0.72 | 0.06 | 0.13 | 0.80 | 0.28 | 0.80 |
| 2004 | 0.40 | 0.83 | 0.07 | 0.17 | 0.88 | 0.28 | 0.88 |
| 2005 | 0.48 | 1.03 | 0.11 | 0.29 | 1.18 | 0.37 | 1.18 |
| 2006 | 0.62 | 1.50 | 0.12 | 0.71 | 1.36 | 0.12 | 1.36 |
| 2007 | 0.60 | 1.27 | 0.14 | 0.95 | 1.14 | 0.17 | 1.14 |
| 2008 | 0.46 | 0.81 | 0.08 | 0.73 | 0.70 | 0.11 | 0.70 |
| 2009 | 0.58 | 0.73 | 0.14 | 0.34 | 1.07 | 0.17 | 1.07 |
| 2010 | 0.38 | 1.17 | 0.04 | 0.27 | 0.74 | 0.09 | 0.74 |
| 2011 | 0.37 | 1.05 | 0.05 | 0.25 | 0.80 | 0.12 | 0.80 |
| 2012 | 0.59 | 1.57 | 0.09 | 0.21 | 1.01 | 0.12 | 1.01 |

| ER Stock Identifiers | | | |
|---|---|---|---|
| Alaska Southeast | Age 4 | Age 5 | Age 6 |
| Quinsam | Age 4 | Age 5 | |
| Robertson Creek | Age 3 | Age 4 | Age 5 |
| Salmon River Hatchery | Age 4 | Age 5 | |
| Columbia Upriver Brights | Age 4 | Age 5 | |
| Willamette Spring Hatchery | Age 4 | Age 5 | |

*Appendix I3. Landed catch exploitation rate indices by stock and age in the NBC troll fishery, based on CWT data. Base period is 1979–1982.*

| | ER Stock Identifiers[1] | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | AKS Age 4 | QUI Age 3 | QUI Age 4 | RBT Age 3 | RBT Age 4 | RBT Age 5 | SRH Age 3 | SRH Age 4 | SRH Age 5 | URB Age 4 | URB Age 5 | WSH Age 4 | Fishery Index |
| 1979 | | 0.55 | 0.81 | 1.17 | 0.83 | 0.48 | 1.18 | | | 1.19 | | 0.65 | 0.83 |
| 1980 | | 0.80 | 1.00 | 1.05 | 0.86 | 0.77 | | 0.93 | | 0.99 | 1.27 | 1.18 | 0.95 |
| 1981 | | 1.77 | 1.48 | 0.84 | 1.04 | 1.75 | 1.31 | | 1.00 | 1.15 | 1.31 | 1.53 | 1.26 |
| 1982 | 1.00 | 0.88 | 0.71 | 0.94 | 1.28 | | 0.51 | 1.07 | | 0.67 | 0.42 | 0.64 | 0.84 |
| 1983 | 1.60 | 1.23 | 1.51 | 0.99 | 0.73 | 0.75 | 0.57 | 1.09 | 0.24 | 1.32 | | 1.26 | 0.80 |
| 1984 | 1.15 | 0.25 | 0.51 | 0.40 | 1.37 | 1.68 | | 1.42 | 1.17 | 2.11 | | 0.51 | 1.19 |
| 1985 | 0.78 | 0.25 | 0.59 | 0.93 | 1.86 | 1.70 | 0.39 | | 1.22 | 1.71 | 1.68 | 0.22 | 1.22 |
| 1986 | 0.72 | 0.96 | 0.86 | | 0.91 | | 0.11 | 1.14 | | 1.25 | 1.99 | | 1.01 |
| 1987 | 0.61 | 0.35 | 0.63 | 0.44 | | | 0.20 | 0.77 | 1.01 | 1.76 | 2.09 | | 0.94 |
| 1988 | 2.02 | 0.19 | 0.71 | 0.30 | 0.62 | | | 0.65 | 0.34 | 1.08 | 2.35 | 0.79 | 0.70 |
| 1989 | 0.96 | 0.44 | 0.46 | 0.37 | 0.88 | 1.05 | 0.14 | 0.57 | 1.00 | 1.03 | 4.22 | 0.37 | 0.98 |
| 1990 | 1.92 | 0.36 | 0.98 | 0.28 | 0.71 | 0.55 | 0.18 | 0.51 | 0.92 | 1.25 | 2.38 | 0.30 | 0.80 |
| 1991 | 0.67 | 0.43 | 0.68 | 0.35 | 0.71 | 1.09 | 0.13 | 0.84 | 0.95 | | | 0.28 | 0.74 |
| 1992 | 0.12 | | 1.91 | 0.27 | 0.58 | 0.63 | 0.13 | 0.51 | 0.44 | | | 0.10 | 0.58 |
| 1993 | 0.27 | | | 0.15 | 0.63 | 0.84 | 0.14 | 1.22 | 0.97 | 1.16 | | 0.21 | 0.77 |
| 1994 | 0.05 | | | 0.30 | 0.72 | 0.86 | 0.22 | 1.11 | 1.01 | 0.94 | 2.07 | 0.12 | 0.88 |
| 1995 | 0.00 | | | | 0.41 | 0.20 | 0.13 | 0.00 | 0.39 | | 0.57 | 0.15 | 0.29 |
| 1996 | 0.00 | | | 0.00 | | | 0.00 | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 |
| 1997 | | 0.40 | 0.26 | 0.22 | 0.31 | | 0.19 | 0.22 | 0.17 | 0.55 | | 0.13 | 0.25 |
| 1998 | 0.00 | | 0.00 | | 0.51 | | 0.07 | 0.96 | 0.53 | | 1.26 | 0.00 | 0.51 |
| 1999 | 0.00 | 0.17 | 0.20 | | 0.35 | 0.56 | 0.10 | 0.39 | 0.23 | 1.20 | | 0.00 | 0.36 |
| 2000 | 0.00 | 0.00 | 0.06 | | | | 0.05 | 0.55 | 0.16 | 0.00 | 0.00 | 0.01 | 0.14 |
| 2001 | | 0.00 | 0.02 | 0.00 | | | 0.05 | 0.36 | 0.42 | 0.00 | | 0.02 | 0.20 |
| 2002 | 0.47 | | 0.15 | 0.00 | 0.44 | | 0.19 | 0.62 | 0.69 | 0.21 | | 0.18 | 0.42 |
| 2003 | 0.00 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.05 | 0.64 | 0.25 | 0.76 | 1.09 | 0.05 | 0.25 |
| 2004 | 0.94 | 0.00 | 0.06 | 0.09 | 0.20 | 0.44 | 0.09 | 0.52 | 0.44 | 0.74 | 1.38 | 0.18 | 0.40 |
| 2005 | 0.18 | 0.07 | 0.04 | 0.03 | 0.33 | 0.10 | 0.11 | 0.91 | 0.43 | 1.50 | 1.05 | 0.09 | 0.42 |
| 2006 | 0.38 | 0.08 | 0.07 | 0.09 | 0.26 | 0.27 | | 0.99 | 0.71 | 1.41 | 1.52 | 0.05 | 0.57 |
| 2007 | 0.09 | | 0.46 | | 0.49 | 0.50 | 0.00 | 1.31 | 0.67 | | | 0.00 | 0.57 |
| 2008 | 0.11 | | | 0.08 | 0.61 | 0.19 | 0.07 | 0.69 | | | | 0.05 | 0.33 |
| 2009 | 0.92 | | 0.11 | 0.19 | 0.21 | | 0.01 | 1.32 | 0.96 | 1.93 | | 0.03 | 0.69 |
| 2010 | 0.21 | 0.00 | | 0.13 | 0.09 | | 0.21 | 1.08 | 0.42 | | | 0.13 | 0.35 |
| 2011 | 0.00 | 0.00 | 0.00 | 0.00 | 0.32 | | 0.05 | 0.90 | 0.56 | 0.60 | | 0.14 | 0.37 |
| 2012 | 0.23 | 0.00 | 0.10 | 0.08 | 0.21 | 0.37 | 0.05 | 1.11 | 0.63 | 1.38 | 2.87 | 0.07 | 0.62 |

[1] Stock Identifiers: AKS = ALASKA SPRING; QUI = QUINSAM; RBT = ROBERTSON CREEK; SRH = SALMON RIVER HATCHERY; URB = COLUMBIA UPRIVER BRIGHT; WSH = WILLAMETTE SPRING.

*Appendix I4. NBC troll fishery Stratified Proportion Fishery Index (SPFI) values as landed catch, based on CWT data.*

| YEAR | SPFI |
|---|---|
| 1979 | 0.95 |
| 1980 | 0.81 |
| 1981 | 1.26 |
| 1982 | 0.98 |
| 1983 | 0.94 |
| 1984 | 0.93 |
| 1985 | 0.90 |
| 1986 | 0.73 |
| 1987 | 0.72 |
| 1988 | 0.65 |
| 1989 | 0.65 |
| 1990 | 0.57 |
| 1991 | 0.63 |
| 1992 | 0.44 |
| 1993 | 0.50 |
| 1994 | 0.60 |
| 1995 | 0.25 |
| 1996 | 0.00 |
| 1997 | 0.20 |
| 1998 | 0.38 |
| 1999 | 0.30 |
| 2000 | 0.08 |
| 2001 | 0.08 |
| 2002 | 0.30 |
| 2003 | 0.21 |
| 2004 | 0.27 |
| 2005 | 0.38 |
| 2006 | 0.38 |
| 2007 | 0.36 |
| 2008 | 0.25 |
| 2009 | 0.52 |
| 2010 | 0.31 |
| 2011 | 0.29 |
| 2012 | 0.35 |

| ER Stock Identifiers | | | |
|---|---|---|---|
| Alaska Southeast | Age 4 | Age 5 | Age 6 |
| Quinsam | Age 4 | Age 5 | |
| Robertson Creek | Age 3 | Age 4 | Age 5 |
| Salmon River Hatchery | Age 4 | Age 5 | |
| Columbia Upriver Brights | Age 4 | Age 5 | |
| Willamette Spring Hatchery | Age 4 | Age 5 | |

*Appendix I5. Total mortality exploitation rate indices by stock and age in the NBC troll fishery, based on CWT data. Base period is 1979–1982.*

| ER Stock Identifiers[1] | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | AKS Age 4 | QUI Age 3 | QUI Age 4 | RBT Age 3 | RBT Age 4 | RBT Age 5 | SRH Age 3 | SRH Age 4 | SRH Age 5 | URB Age 4 | URB Age 5 | WSH Age 4 | Fishery Index |
| 1979 | | 0.56 | 0.82 | 1.15 | 0.83 | 0.48 | 1.16 | | | 1.20 | | 0.63 | 0.83 |
| 1980 | | 0.82 | 0.99 | 1.04 | 0.86 | 0.77 | | 0.94 | | 0.99 | 1.27 | 1.15 | 0.95 |
| 1981 | | 1.73 | 1.47 | 0.86 | 1.04 | 1.76 | 1.26 | | 1.00 | 1.15 | 1.32 | 1.48 | 1.26 |
| 1982 | 1.00 | 0.89 | 0.72 | 0.94 | 1.28 | | 0.58 | 1.06 | | 0.66 | 0.41 | 0.74 | 0.85 |
| 1983 | 1.53 | 1.19 | 1.49 | 1.01 | 0.73 | 0.76 | 0.62 | 1.09 | 0.24 | 1.30 | | 1.25 | 0.81 |
| 1984 | 1.15 | 0.27 | 0.51 | 0.47 | 1.38 | 1.69 | | 1.42 | 1.17 | 2.13 | | 0.54 | 1.18 |
| 1985 | 0.75 | 0.30 | 0.59 | 0.92 | 1.86 | 1.73 | 0.43 | | 1.23 | 1.71 | 1.70 | 0.23 | 1.21 |
| 1986 | 0.69 | 0.92 | 0.86 | | 0.91 | | 0.15 | 1.13 | | 1.26 | 1.95 | | 1.00 |
| 1987 | 0.68 | 0.44 | 0.66 | 0.54 | | | 0.31 | 0.81 | 1.01 | 1.81 | 2.12 | | 0.96 |
| 1988 | 2.19 | 0.26 | 0.72 | 0.44 | 0.65 | | | 0.69 | 0.33 | 1.13 | 2.38 | 0.92 | 0.73 |
| 1989 | 1.02 | 0.53 | 0.44 | 0.47 | 0.88 | 1.06 | 0.24 | 0.61 | 1.01 | 1.06 | 4.23 | 0.41 | 1.00 |
| 1990 | 2.10 | 0.47 | 1.00 | 0.40 | 0.74 | 0.56 | 0.29 | 0.54 | 0.94 | 1.28 | 2.44 | 0.33 | 0.83 |
| 1991 | 0.73 | 0.62 | 0.69 | 0.44 | 0.73 | 1.12 | 0.24 | 0.85 | 0.97 | | | 0.31 | 0.77 |
| 1992 | 0.16 | | 1.98 | 0.39 | 0.60 | 0.66 | 0.33 | 0.54 | 0.45 | | | 0.15 | 0.62 |
| 1993 | 0.32 | | | 0.24 | 0.65 | 0.86 | 0.24 | 1.26 | 0.99 | 1.23 | | 0.24 | 0.80 |
| 1994 | 0.09 | | | 0.37 | 0.73 | 0.88 | 0.24 | 1.13 | 1.02 | 0.96 | 2.13 | 0.14 | 0.89 |
| 1995 | 0.00 | | | | 0.43 | 0.22 | 0.16 | 0.00 | 0.42 | | 0.61 | 0.20 | 0.31 |
| 1996 | 0.13 | | | 0.11 | | | 0.12 | 0.03 | 0.03 | 0.06 | | 0.08 | 0.06 |
| 1997 | | 0.35 | 0.25 | 0.19 | 0.32 | | 0.16 | 0.22 | 0.17 | 0.56 | | 0.11 | 0.24 |
| 1998 | 0.00 | | 0.00 | | 0.50 | | 0.11 | 0.93 | 0.53 | | 1.24 | 0.00 | 0.50 |
| 1999 | 0.00 | 0.17 | 0.19 | | 0.34 | 0.55 | 0.15 | 0.39 | 0.22 | 1.20 | | 0.00 | 0.35 |
| 2000 | 0.04 | 0.00 | 0.06 | | | | 0.09 | 0.56 | 0.15 | 0.00 | 0.00 | 0.01 | 0.14 |
| 2001 | | 0.00 | 0.01 | 0.04 | | | 0.09 | 0.36 | 0.41 | 0.00 | | 0.03 | 0.20 |
| 2002 | 0.56 | | 0.14 | 0.02 | 0.45 | | 0.24 | 0.62 | 0.70 | 0.22 | | 0.18 | 0.42 |
| 2003 | 0.03 | 0.00 | 0.00 | 0.06 | 0.05 | 0.00 | 0.11 | 0.65 | 0.25 | 0.78 | 1.10 | 0.06 | 0.25 |
| 2004 | 1.03 | 0.00 | 0.06 | 0.12 | 0.20 | 0.46 | 0.17 | 0.54 | 0.46 | 0.76 | 1.43 | 0.19 | 0.41 |
| 2005 | 0.24 | 0.07 | 0.04 | 0.06 | 0.34 | 0.10 | 0.19 | 0.94 | 0.44 | 1.56 | 1.11 | 0.11 | 0.43 |
| 2006 | 0.42 | 0.11 | 0.07 | 0.14 | 0.26 | 0.27 | | 0.99 | 0.71 | 1.41 | 1.51 | 0.04 | 0.57 |
| 2007 | 0.10 | | 0.44 | | 0.49 | 0.50 | 0.09 | 1.32 | 0.68 | | | 0.02 | 0.57 |
| 2008 | 0.09 | | | 0.10 | 0.64 | 0.19 | 0.15 | 0.70 | | | | 0.04 | 0.34 |
| 2009 | 0.93 | | 0.11 | 0.20 | 0.21 | | 0.10 | 1.33 | 0.96 | 1.95 | | 0.03 | 0.69 |
| 2010 | 0.27 | 0.00 | | 0.16 | 0.09 | | 0.27 | 1.08 | 0.42 | | | 0.14 | 0.36 |
| 2011 | 0.05 | 0.00 | 0.00 | 0.02 | 0.34 | | 0.11 | 0.98 | 0.60 | 0.67 | | 0.15 | 0.40 |
| 2012 | 0.27 | 0.00 | 0.09 | 0.10 | 0.22 | 0.39 | 0.06 | 1.13 | 0.64 | 1.41 | 2.87 | 0.09 | 0.62 |

[1] Stock Identifiers: AKS = ALASKA SPRING; QUI = QUINSAM; RBT = ROBERTSON CREEK; SRH = SALMON RIVER HATCHERY; URB = COLUMBIA UPRIVER BRIGHT; WSH = WILLAMETTE SPRING.

*Appendix I6. NBC troll fishery Stratified Proportion Fishery Index (SPFI) values as total mortality, based on CWT data.*

| YEAR | SPFI |
|---|---|
| 1979 | 0.95 |
| 1980 | 0.79 |
| 1981 | 1.27 |
| 1982 | 0.99 |
| 1983 | 0.94 |
| 1984 | 0.92 |
| 1985 | 0.88 |
| 1986 | 0.74 |
| 1987 | 0.80 |
| 1988 | 0.70 |
| 1989 | 0.73 |
| 1990 | 0.64 |
| 1991 | 0.63 |
| 1992 | 0.48 |
| 1993 | 0.54 |
| 1994 | 0.58 |
| 1995 | 0.27 |
| 1996 | 0.00 |
| 1997 | 0.19 |
| 1998 | 0.36 |
| 1999 | 0.29 |
| 2000 | 0.10 |
| 2001 | 0.10 |
| 2002 | 0.32 |
| 2003 | 0.22 |
| 2004 | 0.29 |
| 2005 | 0.38 |
| 2006 | 0.38 |
| 2007 | 0.36 |
| 2008 | 0.28 |
| 2009 | 0.52 |
| 2010 | 0.35 |
| 2011 | 0.32 |
| 2012 | 0.34 |

| ER Stock Identifiers | | | |
|---|---|---|---|
| Alaska Southeast | Age 4 | Age 5 | Age 6 |
| Quinsam | Age 4 | Age 5 | |
| Robertson Creek | Age 3 | Age 4 | Age 5 |
| Salmon River Hatchery | Age 4 | Age 5 | |
| Columbia Upriver Brights | Age 4 | Age 5 | |
| Willamette Spring Hatchery | Age 4 | Age 5 | |

*Appendix I7. Landed catch exploitation rate indices by stock and age in the WCVI troll fishery, based on CWT data. Base period is 1979–1982.*

| | ER Stock Identifiers[1] | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | CWF Age 4 | GAD Age 3 | GAD Age 4 | LRH Age 3 | LRH Age 4 | LRW Age 4 | RBT Age 3 | RBT Age 4 | RBT Age 5 | SAM Age 3 | SAM Age 4 | SAM Age 5 | SPR Age 3 | SPR Age 4 | SPS Age 3 | SPS Age 4 | SRH Age 3 | SRH Age 4 | SUM Age 4 | URB Age 3 | URB Age 4 | UWA Age 3 | UWA Age 4 | WSH Age 4 | Fishery Index |
| 1979 | | | | 1.15 | | | 1.18 | 1.25 | | | 1.00 | 1.00 | 0.96 | 0.84 | | 1.13 | 1.57 | | | 1.10 | 1.75 | 0.70 | 1.22 | 1.03 | 1.06 |
| 1980 | | | | 0.56 | 0.90 | | 1.41 | 1.43 | | | | | 1.16 | 1.39 | | | | 1.09 | 0.70 | 1.06 | 0.94 | 1.38 | 0.85 | 1.10 | 1.02 |
| 1981 | 0.79 | 0.71 | | 1.14 | 0.79 | 0.84 | 0.66 | 0.58 | 1.00 | | | | 0.93 | 0.62 | 0.72 | | 0.43 | | 1.30 | | 0.89 | 0.84 | 0.89 | 0.63 | 0.86 |
| 1982 | 1.21 | 1.29 | 1.00 | 1.15 | 1.31 | 1.16 | 0.75 | 0.73 | | 1.00 | | | 0.94 | 1.14 | 1.28 | 0.87 | | 0.91 | | 0.84 | 0.42 | 1.08 | 1.05 | 1.24 | 1.05 |
| 1983 | 1.37 | | 1.41 | 1.64 | 1.63 | 0.96 | 0.42 | 0.84 | 1.84 | | 0.96 | | 1.43 | 0.93 | 1.64 | 0.89 | 1.50 | | | 0.30 | 0.44 | 0.69 | 1.08 | 0.27 | 1.16 |
| 1984 | 1.30 | 2.05 | | 2.10 | 2.87 | | 1.34 | 1.12 | 1.04 | | | 1.07 | 1.29 | 1.37 | 1.61 | 0.96 | | 0.39 | | 0.68 | 1.27 | 1.69 | 0.73 | 0.70 | 1.40 |
| 1985 | 0.89 | | 0.84 | 1.21 | 1.13 | | 0.49 | 0.00 | | | | | 0.53 | 0.96 | 0.81 | 0.65 | | | | 0.65 | 1.01 | 0.78 | 1.01 | 0.44 | 0.85 |
| 1986 | 1.27 | | | 1.20 | 1.21 | 0.47 | | 1.09 | | | | | 1.17 | 0.99 | 0.89 | 1.07 | | 0.18 | | 1.15 | 1.39 | 0.84 | 1.09 | | 1.06 |
| 1987 | 0.85 | | | 0.98 | | 1.44 | 0.27 | | | | | | 0.44 | | 0.75 | 0.51 | 0.26 | 0.21 | | 0.80 | 0.79 | 0.36 | 0.40 | | 0.63 |
| 1988 | 0.84 | 0.42 | | 1.13 | 1.37 | 1.05 | 0.44 | 0.57 | | 0.60 | | | 0.95 | | 0.30 | 0.68 | | 0.64 | 1.12 | 0.07 | 1.88 | | 0.77 | 0.87 | 0.90 |
| 1989 | 0.52 | 0.25 | 0.49 | 0.28 | 0.56 | 0.55 | 0.22 | 0.34 | 0.00 | 0.21 | 0.60 | | 0.58 | 0.39 | 0.35 | 0.38 | 0.33 | | 0.73 | | 0.89 | | | 0.54 | 0.47 |
| 1990 | 0.72 | 1.09 | 0.93 | 1.12 | 0.41 | 1.21 | 0.66 | 0.51 | 1.49 | 0.41 | 0.87 | | 0.90 | 0.72 | 0.75 | 0.82 | 0.71 | 0.43 | 1.44 | | 1.67 | | | 0.84 | 0.87 |
| 1991 | | | 0.94 | 0.78 | | 0.74 | 0.59 | 0.53 | 1.36 | 0.25 | 0.56 | 1.11 | 0.58 | 0.62 | 0.42 | 0.52 | 0.89 | 0.35 | 0.47 | | | | | 0.08 | 0.68 |
| 1992 | 1.14 | | 0.32 | 0.67 | | 0.32 | 1.55 | 2.43 | 5.09 | 1.05 | 0.26 | | 0.43 | 0.74 | 0.73 | 0.71 | 1.28 | 2.42 | 0.72 | | | | | 0.17 | 0.79 |
| 1993 | | | | 1.11 | 0.68 | | 1.10 | 2.28 | 2.42 | 1.13 | 0.42 | | 0.53 | 0.99 | 1.05 | 0.52 | 1.21 | 1.17 | | 0.50 | 1.96 | | | 0.44 | 0.86 |
| 1994 | 0.12 | | | | | 0.22 | 0.61 | 0.66 | 1.28 | 0.06 | 0.70 | | 0.81 | 0.64 | 0.22 | 0.46 | | 0.38 | | | 0.95 | | | 0.26 | 0.53 |
| 1995 | | 0.22 | | | | 0.43 | | 0.44 | 0.28 | 0.16 | 0.37 | | 0.35 | 0.34 | 0.28 | 0.25 | 0.04 | | | | | | | 0.12 | 0.32 |
| 1996 | 0.00 | 0.00 | 0.00 | 0.00 | | | 0.00 | | | 0.00 | 0.00 | | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | 0.00 | 0.00 |
| 1997 | 0.39 | | 0.21 | 0.77 | | | 0.00 | 0.04 | | 0.02 | 0.24 | | 0.48 | 0.40 | 0.04 | 0.29 | 0.00 | 0.03 | 0.06 | | 0.07 | | | 0.00 | 0.30 |
| 1998 | | | | | | | | 0.00 | | | 0.08 | | 0.05 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.01 | | | | 0.04 | 0.03 |
| 1999 | | 0.05 | | 0.09 | | | | | 0.00 | | 0.07 | | 0.02 | | 0.02 | 0.05 | 0.00 | 0.00 | 0.03 | | 0.00 | | | 0.00 | 0.04 |
| 2000 | | | 1.21 | 0.09 | 1.73 | | | | | | 1.10 | | 0.04 | 0.75 | 0.03 | 0.71 | 0.00 | 0.00 | 0.21 | 0.09 | 0.51 | | | 0.08 | 0.69 |
| 2001 | | 0.78 | 1.22 | 0.28 | 0.89 | 0.72 | 0.00 | | | 0.42 | 0.35 | | 0.15 | 0.60 | 0.49 | 0.55 | 0.00 | 0.05 | 0.44 | 0.10 | 0.17 | | | 0.18 | 0.53 |
| 2002 | 0.56 | 0.17 | 0.62 | 0.29 | 0.39 | | 0.02 | 0.00 | | 0.26 | 0.40 | | 0.28 | 0.69 | 0.42 | 0.49 | 0.00 | 0.00 | 0.49 | 0.07 | 0.27 | | | 0.28 | 0.42 |
| 2003 | 0.53 | 0.11 | 0.72 | 0.27 | 0.76 | 0.12 | 0.00 | 0.00 | | | 0.59 | | 0.28 | 0.58 | 0.36 | 0.55 | 0.00 | 0.00 | 0.56 | 0.14 | 0.11 | | | 0.56 | 0.46 |
| 2004 | | 0.08 | 1.18 | 0.37 | 1.04 | 0.12 | 0.03 | 0.02 | 0.00 | 0.18 | 0.57 | | 0.35 | 0.81 | 0.11 | 0.83 | 0.18 | 0.25 | 0.25 | 0.13 | 0.49 | | | 2.16 | 0.59 |
| 2005 | 0.30 | 0.74 | 0.97 | 0.69 | 1.70 | 0.12 | 0.00 | 0.00 | | 0.12 | 0.80 | | 0.88 | 1.19 | 0.68 | 0.63 | 0.16 | 0.22 | 0.48 | 0.10 | 0.46 | | | 1.20 | 0.76 |
| 2006 | | 0.27 | 0.92 | | | 0.46 | 0.00 | 0.00 | | 0.39 | 0.77 | | 0.56 | 1.38 | 0.52 | 0.73 | | 0.28 | 0.32 | | 0.73 | | | 1.44 | 0.71 |
| 2007 | | 0.98 | 0.79 | 0.68 | | | | 0.02 | | 1.28 | 0.57 | | 0.60 | 0.93 | 1.00 | 0.69 | 0.00 | | 0.45 | | 0.13 | | | 0.22 | 0.68 |
| 2008 | | 0.47 | 0.38 | 0.41 | | | 0.00 | | 0.00 | 0.71 | 0.34 | | 0.21 | | 0.50 | 0.32 | 0.23 | 0.00 | 0.24 | 0.24 | | | | 0.17 | 0.32 |
| 2009 | 0.00 | 0.63 | 0.52 | 0.20 | 0.23 | | | 0.00 | | 0.66 | 0.16 | | 0.15 | 0.05 | 0.57 | 0.19 | 0.04 | 0.04 | 0.34 | | 0.12 | | | 0.10 | 0.22 |
| 2010 | 0.11 | 0.95 | 0.43 | 0.33 | | | 0.04 | 0.26 | | 0.99 | 0.13 | | 0.24 | 0.35 | 0.49 | 0.12 | 0.00 | 0.00 | 0.20 | 0.10 | | | | 0.22 | 0.27 |
| 2011 | 0.08 | 0.41 | 0.22 | 0.40 | 0.75 | | 0.00 | 0.00 | | 0.00 | 0.41 | | 0.24 | 0.58 | 0.04 | 0.21 | 0.10 | 0.55 | 0.21 | 0.00 | 0.35 | | | 0.49 | 0.32 |
| 2012 | 0.21 | 0.22 | 0.25 | 0.15 | 0.00 | | | 0.00 | 0.17 | 0.30 | 0.05 | | 0.12 | 0.46 | 0.40 | 0.17 | 0.06 | 0.34 | 0.44 | 0.11 | 0.30 | | | 1.05 | 0.21 |

[1] Stock Identifiers: CWF = COWLITZ FALL TULE; RBT = ROBERTSON CREEK; SRH = SALMON RIVER HATCHERY; WSH = WILLAMETTE SPRING; GAD = G ADAMS FALL FING; SAM = SAMISH FALL FING; SUM = COL RIVER SUMMERS; CHI = CHILLAWACK; LRH = LOWER RIVER TULE; SPR = SPRING CREEK TULE; URB = COLUMBIA UPRIVER BRIGHT; LRW = LEWIS RIVER WILD; SPS = SO SOUND FALL FING; UWA = U OF W FALL ACCEL (*discontinued*).

*Appendix I8. WCVI troll fishery Stratified Proportion Fishery Index (SPFI) values as landed catch, based on CWT data.*

| YEAR | SPFI |
|---|---|
| 1979 | 1.09 |
| 1980 | 1.16 |
| 1981 | 0.86 |
| 1982 | 0.89 |
| 1983 | 1.00 |
| 1984 | 1.34 |
| 1985 | 1.22 |
| 1986 | 0.91 |
| 1987 | 1.40 |
| 1988 | 1.71 |
| 1989 | 0.82 |
| 1990 | 1.12 |
| 1991 | 0.58 |
| 1992 | 1.69 |
| 1993 | 0.72 |
| 1994 | 0.51 |
| 1995 | 0.59 |
| 1996 | 0.00 |
| 1997 | 0.41 |
| 1998 | 0.02 |
| 1999 | 0.17 |
| 2000 | 0.67 |
| 2001 | 0.22 |
| 2002 | 0.21 |
| 2003 | 0.52 |
| 2004 | 0.39 |
| 2005 | 0.62 |
| 2006 | 0.42 |
| 2007 | 0.38 |
| 2008 | 0.36 |
| 2009 | 0.12 |
| 2010 | 0.11 |
| 2011 | 0.22 |
| 2012 | 0.21 |

| ER Stock Identifiers | | | |
|---|---|---|---|
| Cowlitz Fall Tule | Age 4 | | |
| George Adams | Age 3 | Age 4 | |
| Lower River Hatchery | Age 3 | Age 4 | |
| Lewis River Wild | Age 4 | | |
| Robertson Creek | Age 3 | Age 4 | Age 5 |
| Samish | Age 3 | Age 4 | |
| Spring Creek | Age 3 | Age 4 | |
| South Puget Sound Fingerling | Age 3 | Age 4 | |
| Salmon River Hatchery | Age 3 | Age 4 | Age 5 |
| Columbia River Summers | Age 4 | | |
| Columbia Upriver Brights | Age 3 | Age 4 | |
| U of WA Accel. (*discontinued*) | Age 3 | Age 4 | |
| Willamette Spring Hatchery | Age 4 | | |
| Chilliwack | Age 3 | Age 4 | |

*Appendix I9. Total mortality exploitation rate indices by stock and age in the WCVI troll fishery, based on CWT data. Base period is 1979–1982.*

| Stock Identifiers[1] | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CWF | GAD | GAD | LRH | LRH | LRW | RBT | RBT | RBT | SAM | SAM | SAM | SPR | SPR | SPS | SPS | SRH | SRH | SUM | URB | URB | UWA | UWA | WSH | Fishery Index |
| Year | Age 4 | Age 3 | Age 4 | Age 3 | Age 4 | Age 4 | Age 3 | Age 4 | Age 5 | Age 3 | Age 4 | Age 5 | Age 3 | Age 4 | Age 3 | Age 4 | Age 3 | Age 4 | Age 4 | Age 3 | Age 4 | Age 3 | Age 4 | Age 4 | |
| 1979 | 0.03 | | 1.05 | 1.16 | | | 1.19 | 1.25 | 1.50 | | 1.00 | 1.08 | 0.97 | 0.85 | | 1.14 | 1.40 | | 1.07 | 1.38 | 1.75 | 0.70 | 1.23 | 1.01 | 1.06 |
| 1980 | 1.77 | | | 0.57 | 0.88 | | 1.38 | 1.43 | 0.00 | | | 0.92 | 1.16 | 1.39 | | | 1.53 | 1.66 | 0.67 | 1.33 | 0.95 | 1.38 | 0.85 | 1.11 | 1.02 |
| 1981 | 0.51 | 0.72 | | 1.13 | 0.78 | 0.85 | 0.67 | 0.60 | 1.05 | | | | 0.94 | 0.62 | 0.73 | | 0.43 | 0.00 | 1.26 | 0.23 | 0.89 | 0.83 | 0.87 | 0.65 | 0.83 |
| 1982 | 1.69 | 1.28 | 0.95 | 1.14 | 1.34 | 1.15 | 0.75 | 0.73 | 1.45 | 1.00 | | | 0.93 | 1.14 | 1.27 | 0.86 | 0.65 | 1.34 | | 1.07 | 0.41 | 1.09 | 1.05 | 1.23 | 1.06 |
| 1983 | 0.00 | 1.69 | 1.33 | 1.63 | 1.65 | 0.97 | 0.45 | 0.84 | 1.98 | | 0.96 | | 1.43 | 0.92 | 1.58 | 0.89 | 1.29 | 0.50 | | 0.44 | 0.43 | 0.70 | 1.08 | 0.33 | 1.13 |
| 1984 | 0.00 | 1.89 | 0.53 | 2.07 | 2.87 | | 1.28 | 1.11 | 1.14 | | | 1.16 | 1.29 | 1.36 | 1.53 | 0.96 | | 0.63 | | 0.87 | 1.27 | 1.67 | 0.73 | 0.71 | 1.32 |
| 1985 | 1.51 | | 0.79 | 1.21 | 1.15 | | 0.51 | 0.00 | 0.39 | | | | 0.54 | 0.96 | 0.89 | 0.65 | 0.45 | | | 0.86 | 1.03 | 0.81 | 1.03 | 0.51 | 0.86 |
| 1986 | 0.00 | | | 1.20 | 1.24 | 0.47 | 2.06 | 1.09 | 1.12 | | | | 1.14 | 0.99 | 0.87 | 1.06 | 0.26 | 0.27 | | 1.44 | 1.41 | 0.84 | 1.09 | 0.84 | 1.04 |
| 1987 | 1.31 | | | 1.09 | 1.70 | 1.50 | 0.33 | 0.00 | 0.00 | | | | 0.53 | 0.00 | 0.87 | 0.53 | 0.34 | 0.36 | 0.00 | 1.26 | 0.85 | 0.46 | 0.43 | 0.61 | 0.64 |
| 1988 | 0.00 | 0.53 | | 1.25 | 1.49 | 1.11 | 0.52 | 0.60 | 0.00 | 0.75 | | | 1.06 | 1.19 | 0.42 | 0.71 | 0.45 | 1.03 | 1.12 | 0.27 | 2.00 | | 0.81 | 0.95 | 0.97 |
| 1989 | 2.25 | 0.40 | 0.47 | 0.30 | 0.61 | 0.57 | 0.28 | 0.36 | 0.00 | 0.39 | 0.61 | | 0.63 | 0.42 | 0.48 | 0.39 | 0.43 | 0.88 | 0.72 | 0.47 | 0.93 | | | 0.57 | 0.53 |
| 1990 | 1.50 | 1.17 | 0.90 | 1.19 | 0.41 | 1.23 | 0.77 | 0.53 | 1.63 | 0.52 | 0.88 | 0.00 | 0.96 | 0.74 | 0.82 | 0.83 | 0.81 | 0.70 | 1.41 | 0.31 | 1.68 | | | 0.87 | 0.84 |
| 1991 | 0.00 | 0.06 | 0.92 | 0.82 | 0.98 | 0.77 | 0.82 | 0.57 | 1.46 | 0.27 | 0.58 | 1.20 | 0.63 | 0.65 | 0.53 | 0.53 | 1.16 | 0.60 | 0.46 | 1.35 | 2.31 | | | 0.12 | 0.75 |
| 1992 | 0.68 | 1.30 | 0.29 | 0.71 | 1.36 | 0.34 | 1.75 | 2.47 | 5.48 | 1.11 | 0.26 | 1.79 | 0.48 | 0.76 | 0.80 | 0.73 | 1.34 | 3.76 | 0.72 | 0.42 | 2.36 | | | 0.21 | 0.95 |
| 1993 | 0.00 | 0.00 | 1.65 | 1.18 | 0.71 | 0.00 | 1.16 | 2.34 | 2.64 | 1.21 | 0.43 | 0.00 | 0.58 | 1.01 | 1.11 | 0.53 | 1.13 | 1.85 | 2.04 | 0.76 | 2.00 | | | 0.50 | 0.91 |
| 1994 | 0.73 | 0.16 | 0.00 | 1.90 | 1.02 | 0.24 | 0.63 | 0.69 | 1.43 | 0.15 | 0.71 | 0.00 | 0.86 | 0.66 | 0.26 | 0.47 | 0.17 | 0.62 | 0.00 | 0.00 | 0.99 | | | 0.27 | 0.59 |
| 1995 | 0.00 | 0.23 | 1.03 | 0.00 | 0.00 | 0.48 | 0.00 | 0.47 | 0.36 | 0.19 | 0.41 | 0.52 | 0.43 | 0.42 | 0.31 | 0.28 | 0.04 | 0.41 | 0.00 | 0.37 | 0.00 | | | 0.14 | 0.34 |
| 1996 | 0.00 | 0.10 | 0.02 | 0.06 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.10 | 0.02 | 0.00 | 0.06 | 0.06 | 0.10 | 0.02 | 0.09 | 0.04 | 0.03 | 0.09 | 0.06 | | | 0.03 | 0.04 |
| 1997 | 0.00 | 0.00 | 0.21 | 0.71 | 0.53 | 0.00 | 0.00 | 0.04 | 0.00 | 0.03 | 0.25 | 2.05 | 0.45 | 0.41 | 0.05 | 0.30 | 0.00 | 0.04 | 0.06 | 0.00 | 0.07 | | | 0.00 | 0.43 |
| 1998 | 0.00 | 0.00 | 0.07 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.04 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | | | 0.03 | 0.03 |
| 1999 | 0.00 | 0.05 | 0.15 | 0.08 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | 0.22 | 0.01 | 0.00 | 0.02 | 0.05 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | | | 0.00 | 0.06 |
| 2000 | 0.00 | 0.06 | 1.15 | 0.08 | 1.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 1.07 | 2.56 | 0.05 | 0.73 | 0.03 | 0.71 | 0.00 | 0.00 | 0.19 | 0.11 | 0.50 | | | 0.07 | 0.74 |
| 2001 | 0.31 | 0.66 | 1.19 | 0.26 | 0.87 | 0.70 | 0.00 | 0.00 | 0.00 | 0.37 | 0.34 | 0.00 | 0.14 | 0.58 | 0.44 | 0.54 | 0.00 | 0.08 | 0.42 | 0.13 | 0.17 | | | 0.16 | 0.45 |
| 2002 | 0.96 | 0.16 | 0.58 | 0.27 | 0.38 | 0.44 | 0.01 | 0.00 | 13.34 | 0.22 | 0.40 | | 0.26 | 0.68 | 0.38 | 0.48 | 0.00 | 0.00 | 0.47 | 0.08 | 0.27 | | | 0.27 | 0.57 |
| 2003 | 1.39 | 0.10 | 0.67 | 0.25 | 0.76 | 0.12 | 0.00 | 0.00 | 0.00 | 0.15 | 0.57 | 0.82 | 0.26 | 0.57 | 0.32 | 0.54 | 0.00 | 0.00 | 0.54 | 0.16 | 0.10 | | | 0.52 | 0.48 |
| 2004 | 0.00 | 0.07 | 1.12 | 0.35 | 1.04 | 0.12 | 0.03 | 0.02 | 0.00 | 0.16 | 0.55 | 0.73 | 0.32 | 0.80 | 0.10 | 0.82 | 0.15 | 0.38 | 0.24 | 0.15 | 0.48 | | | 2.00 | 0.58 |
| 2005 | 2.26 | 0.65 | 0.92 | 0.62 | 1.70 | 0.12 | 0.00 | 0.00 | 0.00 | 0.12 | 0.79 | 1.64 | 0.83 | 1.17 | 0.61 | 0.62 | 0.13 | 0.34 | 0.46 | 0.12 | 0.45 | | | 1.11 | 0.86 |
| 2006 | 0.00 | 0.24 | 0.87 | 0.40 | 0.44 | 0.45 | 0.00 | 0.00 | 0.00 | 0.35 | 0.74 | 0.00 | 0.52 | 1.38 | 0.47 | 0.72 | 0.27 | 0.42 | 0.30 | 0.00 | 0.71 | | | 1.34 | 0.56 |
| 2007 | 0.00 | 0.85 | 0.75 | 0.62 | 0.67 | 0.41 | 0.00 | 0.02 | 0.00 | 1.11 | 0.57 | 1.47 | 0.55 | 0.90 | 0.88 | 0.69 | 0.00 | 0.00 | 0.43 | 0.82 | 0.13 | | | 0.20 | 0.67 |
| 2008 | 0.00 | 0.40 | 0.35 | 0.37 | 0.00 | 1.71 | 0.00 | 0.00 | 0.00 | 0.61 | 0.33 | 0.00 | 0.19 | 0.00 | 0.44 | 0.31 | 0.19 | 0.00 | 0.23 | 0.27 | 0.00 | | | 0.15 | 0.25 |
| 2009 | 0.00 | 0.55 | 0.49 | 0.19 | 0.22 | 0.63 | 0.00 | 0.00 | 0.00 | 0.56 | 0.15 | 0.00 | 0.14 | 0.05 | 0.51 | 0.18 | 0.03 | 0.06 | 0.33 | 0.00 | 0.11 | | | 0.09 | 0.21 |
| 2010 | 0.62 | 0.82 | 0.40 | 0.31 | 0.00 | 0.32 | 0.03 | 0.25 | 0.00 | 0.86 | 0.13 | 0.00 | 0.22 | 0.34 | 0.43 | 0.12 | 0.00 | 0.00 | 0.19 | 0.12 | 0.00 | | | 0.20 | 0.23 |
| 2011 | 0.00 | 0.37 | 0.20 | 0.37 | 0.74 | 0.47 | 0.00 | 0.00 | 3.10 | 0.00 | 0.40 | 0.00 | 0.23 | 0.56 | 0.04 | 0.20 | 0.08 | 0.84 | 0.20 | 0.00 | 0.35 | | | 0.46 | 0.34 |
| 2012 | 0.00 | 0.20 | 0.23 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.18 | 0.27 | 0.05 | 0.00 | 0.11 | 0.45 | 0.35 | 0.17 | 0.05 | 0.52 | 0.43 | 0.13 | 0.29 | | | 0.98 | 0.18 |

[1] Stock identifiers: CWF = COWLITZ FALL TULE; RBT = ROBERTSON CREEK; SRH = SALMON RIVER HATCHERY; WSH = WILLAMETTE SPRING; GAD = G ADAMS FALL FING; SAM = SAMISH FALL FING; SUM = COL RIVER SUMMERS; CHI = CHILLAWACK; LRH = LOWER RIVER TULE; SPR = SPRING CREEK TULE; URB = COLUMBIA UPRIVER BRIGHT; LRW = LEWIS RIVER WILD; SPS = SO SOUND FALL FING; UWA = U OF W FALL ACCEL (*discontinued*).

*Appendix I10. WCVI troll fishery Stratified Proportion Fishery Index (SPFI) values as total mortality, based on CWT data.*

| YEAR | SPFI |
|---|---|
| 1979 | 1.07 |
| 1980 | 1.15 |
| 1981 | 0.88 |
| 1982 | 0.90 |
| 1983 | 0.97 |
| 1984 | 1.34 |
| 1985 | 1.21 |
| 1986 | 0.90 |
| 1987 | 1.59 |
| 1988 | 1.80 |
| 1989 | 0.95 |
| 1990 | 1.15 |
| 1991 | 0.63 |
| 1992 | 1.74 |
| 1993 | 0.74 |
| 1994 | 0.51 |
| 1995 | 0.69 |
| 1996 | 0.00 |
| 1997 | 0.39 |
| 1998 | 0.02 |
| 1999 | 0.16 |
| 2000 | 0.63 |
| 2001 | 0.21 |
| 2002 | 0.20 |
| 2003 | 0.49 |
| 2004 | 0.37 |
| 2005 | 0.58 |
| 2006 | 0.40 |
| 2007 | 0.36 |
| 2008 | 0.34 |
| 2009 | 0.12 |
| 2010 | 0.10 |
| 2011 | 0.21 |
| 2012 | 0.19 |

| ER Stock Identifiers | | | |
|---|---|---|---|
| Cowlitz Fall Tule | Age 4 | | |
| George Adams | Age 3 | Age 4 | |
| Lower River Hatchery | Age 3 | Age 4 | |
| Lewis River Wild | Age 4 | | |
| Robertson Creek | Age 3 | Age 4 | Age 5 |
| Samish | Age 3 | Age 4 | |
| Spring Creek | Age 3 | Age 4 | |
| South Puget Sound Fingerling | Age 3 | Age 4 | |
| Salmon River Hatchery | Age 3 | Age 4 | Age 5 |
| Columbia River Summers | Age 4 | | |
| Columbia Upriver Brights | Age 3 | Age 4 | |
| U of WA Accel. (*discontinued*) | Age 3 | Age 4 | |
| Willamette Spring Hatchery | Age 4 | | |
| Chilliwack | Age 3 | Age 4 | |

# APPENDIX J: PRESEASON FORECASTS INCLUDING 2014 AND POSTSEASON ESTIMATES FOR PSC MODEL STOCKS, 1999-2013

Appendix J1. Page 1 of 9.

| Stock | Year | Model Forecast | Agency Forecast | Postseason Return | Model Fcst/ Agency Fcst | Agency Fcst/ Postseason | Model Fcst/ Postseason |
|---|---|---|---|---|---|---|---|
| AKS[1] (Alaska SSE) | 1999 | 11,866 | NA | 12,654 | NA | NA | 94% |
| | 2000 | 18,967 | NA | 15,909 | NA | NA | 119% |
| | 2001 | 22,130 | NA | 21,226 | NA | NA | 104% |
| | 2002 | 15,650 | NA | 19,473 | NA | NA | 80% |
| | 2003 | 22,316 | NA | 14,206 | NA | NA | 157% |
| | 2004 | 11,880 | NA | 16,420 | NA | NA | 72% |
| | 2005 | 25,204 | NA | 16,102 | NA | NA | 157% |
| | 2006 | 17,966 | NA | 20,866 | NA | NA | 86% |
| | 2007 | 25,653 | NA | 15,095 | NA | NA | 170% |
| | 2008 | 14,626 | NA | 13,865 | NA | NA | 105% |
| | 2009 | 14,362 | NA | 11,296 | NA | NA | 127% |
| | 2010 | 16,445 | NA | 16,194 | NA | NA | 102% |
| | 2011 | 17,065 | NA | 11,938 | NA | NA | 143% |
| | 2012 | 12,557 | NA | 6,784 | NA | NA | 185% |
| | 2013 | 4,838 | NA | 8,175 | NA | NA | 59% |
| | 2014 | 4,239 | NA | | NA | | |
| | AVG. | | | | NA | NA | 117% |
| NTH[2] (North/ Central BC) | 1999 | 149,593 | NA | 150,775 | NA | NA | 99% |
| | 2000 | 159,818 | NA | 185,147 | NA | NA | 86% |
| | 2001 | 189,088 | NA | 228,774 | NA | NA | 83% |
| | 2002 | 228,073 | NA | 136,625 | NA | NA | 167% |
| | 2003 | 154,103 | NA | 166,568 | NA | NA | 93% |
| | 2004 | 171,070 | NA | 152,207 | NA | NA | 112% |
| | 2005 | 154,552 | NA | 127,075 | NA | NA | 122% |
| | 2006 | 132,710 | NA | 151,812 | NA | NA | 87% |
| | 2007 | 156,017 | NA | 123,565 | NA | NA | 126% |
| | 2008 | 131,262 | NA | 105,806 | NA | NA | 124% |
| | 2009 | 119,761 | NA | 126,605 | NA | NA | 95% |
| | 2010 | 136,998 | NA | 113,361 | NA | NA | 121% |
| | 2011 | 119,323 | NA | 95,175 | NA | NA | 125% |
| | 2012 | 98,010 | NA | 78,714 | NA | NA | 125% |
| | 2013 | 86,819 | NA | 99,874 | NA | NA | 87% |
| | 2014 | 94,878 | NA | | NA | | |
| | AVG. | | | | NA | NA | 110% |
| RBH+RBT[2] (WCVI Hatchery + Natural) | 1999 | 78,074 | 68,400 | 98,400 | 114% | 70% | 79% |
| | 2000 | 21,040 | 15,040 | 37,090 | 140% | 41% | 57% |
| | 2001 | 33,702 | 30,633 | 86,787 | 110% | 35% | 39% |
| | 2002 | 128,068 | 109,882 | 109,882 | 117% | 100% | 117% |
| | 2003 | 111,430 | 105,801 | 215,345 | 105% | 49% | 52% |
| | 2004 | 166,548 | 144,180 | 247,500 | 116% | 58% | 67% |
| | 2005 | 244,768 | 218,840 | 154,594 | 112% | 142% | 158% |
| | 2006 | 152,483 | 138,878 | 197,097 | 110% | 70% | 77% |
| | 2007 | 151,925 | 117,321 | 118,082 | 129% | 99% | 129% |
| | 2008 | 67,347 | 60,255 | 98,744 | 112% | 61% | 68% |
| | 2009 | 76,063 | 58,382 | 88,429 | 130% | 66% | 86% |
| | 2010 | 75,748 | 61,586 | 92,534 | 123% | 67% | 82% |
| | 2011 | 98,929 | 74,708 | 161,914 | 132% | 46% | 61% |
| | 2012 | 70,838 | 54,765 | 84,432 | 129% | 65% | 84% |
| | 2013 | 32,180 | NA | 173,632 | NA | NA | 19% |
| | 2014 | 205,989 | 216,727 | | 95% | | |
| | AVG. | | | | 118% | 69% | 78% |

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Appendix J1. Page 2 of 9.

| Stock | Year | Model Forecast | Agency Forecast | Postseason Return | Model Fcst/ Agency Fcst | Agency Fcst/ Postseason | Model Fcst/ Postseason |
|---|---|---|---|---|---|---|---|
| GSQ[1] (Upper Strait of Georgia) | 1999 | 16,472 | NA | 16,142 | NA | NA | 102% |
| | 2000 | 19,452 | NA | 22,200 | NA | NA | 88% |
| | 2001 | 25,828 | NA | 35,620 | NA | NA | 73% |
| | 2002 | 41,492 | NA | 29,986 | NA | NA | 138% |
| | 2003 | 36,882 | NA | 31,059 | NA | NA | 119% |
| | 2004 | 39,766 | NA | 28,359 | NA | NA | 140% |
| | 2005 | 38,798 | NA | 31,517 | NA | NA | 123% |
| | 2006 | 39,171 | NA | 33,024 | NA | NA | 119% |
| | 2007 | 41,711 | NA | 22,674 | NA | NA | 184% |
| | 2008 | 30,065 | NA | 20,641 | NA | NA | 146% |
| | 2009 | 26,173 | NA | 19,923 | NA | NA | 131% |
| | 2010 | 26,624 | NA | 18,523 | NA | NA | 144% |
| | 2011 | 23,998 | NA | 19,469 | NA | NA | 123% |
| | 2012 | 25,756 | NA | 24,304 | NA | NA | 106% |
| | 2013 | 31,498 | NA | 22,927 | NA | NA | 137% |
| | 2014 | 30,162 | NA | | NA | | |
| | AVG. | | | | NA | NA | 125% |
| GSH[2] (Lower Strait of Georgia Hatchery) | 1999 | 23,648 | NA | 20,000 | NA | NA | 118% |
| | 2000 | 19,165 | NA | 20,286 | NA | NA | 94% |
| | 2001 | 17,547 | NA | 27,458 | NA | NA | 64% |
| | 2002 | 25,051 | NA | 23,557 | NA | NA | 106% |
| | 2003 | 21,222 | NA | 24,084 | NA | NA | 88% |
| | 2004 | 16,573 | NA | 22,119 | NA | NA | 75% |
| | 2005 | 21,046 | NA | 28,226 | NA | NA | 75% |
| | 2006 | 18,169 | NA | 22,756 | NA | NA | 80% |
| | 2007 | 24,378 | NA | 13,155 | NA | NA | 185% |
| | 2008 | 11,765 | NA | 13,410 | NA | NA | 88% |
| | 2009 | 17,551 | NA | 14,398 | NA | NA | 122% |
| | 2010 | 7,999 | NA | 14,360 | NA | NA | 56% |
| | 2011 | 14,671 | NA | 9,555 | NA | NA | 154% |
| | 2012 | 10,104 | NA | 8,449 | NA | NA | 120% |
| | 2013 | 5,568 | NA | 7,716 | NA | NA | 72% |
| | 2014 | 6,116 | NA | | NA | | |
| | AVG. | | | | NA | NA | 100% |
| GST[1] (Lower Strait of Georgia Natural) | 1999 | 14,737 | NA | 9,032 | NA | NA | 163% |
| | 2000 | 11,094 | NA | 8,119 | NA | NA | 137% |
| | 2001 | 7,955 | NA | 8,836 | NA | NA | 90% |
| | 2002 | 8,833 | NA | 8,188 | NA | NA | 108% |
| | 2003 | 8,088 | NA | 5,374 | NA | NA | 151% |
| | 2004 | 5,157 | NA | 3,700 | NA | NA | 139% |
| | 2005 | 4,459 | NA | 5,415 | NA | NA | 82% |
| | 2006 | 4,070 | NA | 7,469 | NA | NA | 54% |
| | 2007 | 7,782 | NA | 4,778 | NA | NA | 163% |
| | 2008 | 6,823 | NA | 4,926 | NA | NA | 139% |
| | 2009 | 5,701 | NA | 2,966 | NA | NA | 192% |
| | 2010 | 2,972 | NA | 5,676 | NA | NA | 52% |
| | 2011 | 10,778 | NA | 7,873 | NA | NA | 137% |
| | 2012 | 11,433 | NA | 6,070 | NA | NA | 188% |
| | 2013 | 8,267 | NA | 5,668 | NA | NA | 146% |
| | 2014 | 11,910 | NA | | NA | | |
| | AVG. | | | | NA | NA | 129% |

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Appendix J1. Page 3 of 9.

| Stock | Year | Model Forecast | Agency Forecast | Postseason Return | Model Fcst/ Agency Fcst | Agency Fcst/ Postseason | Model Fcst/ Postseason |
|---|---|---|---|---|---|---|---|
| FRE[2] (Fraser Early) | 1999 | 163,342 | NA | 106,000 | NA | NA | 154% |
| | 2000 | 118,058 | NA | 116,750 | NA | NA | 101% |
| | 2001 | 122,333 | NA | 180,952 | NA | NA | 68% |
| | 2002 | 170,232 | NA | 214,347 | NA | NA | 79% |
| | 2003 | 202,363 | NA | 188,183 | NA | NA | 108% |
| | 2004 | 185,450 | NA | 141,029 | NA | NA | 131% |
| | 2005 | 151,591 | NA | 134,461 | NA | NA | 113% |
| | 2006 | 141,517 | NA | 203,212 | NA | NA | 70% |
| | 2007 | 196,060 | NA | 110,884 | NA | NA | 177% |
| | 2008 | 128,347 | NA | 148,284 | NA | NA | 87% |
| | 2009 | 153,593 | NA | 134,307 | NA | NA | 114% |
| | 2010 | 144,214 | NA | 171,819 | NA | NA | 84% |
| | 2011 | 174,183 | NA | 164,913 | NA | NA | 106% |
| | 2012 | 175,729 | NA | 73,865 | NA | NA | 238% |
| | 2013 | 83,719 | NA | 165,698 | NA | NA | 51% |
| | 2014 | 176,008 | NA | | NA | | |
| | AVG. | | | | NA | NA | 112% |
| FRL[1] (Fraser Late) | 1999 | 144,316 | 82,650 | 189,400 | 175% | 44% | 76% |
| | 2000 | 187,970 | 220,400 | 195,542 | 85% | 113% | 96% |
| | 2001 | 141,745 | 131,800 | 141,196 | 108% | 93% | 100% |
| | 2002 | 132,946 | 160,100 | 165,245 | 83% | 97% | 80% |
| | 2003 | 127,144 | 114,780 | 313,929 | 111% | 37% | 41% |
| | 2004 | 104,597 | 97,227 | 196,396 | 108% | 50% | 53% |
| | 2005 | 121,315 | 108,061 | 124,704 | 112% | 87% | 97% |
| | 2006 | 115,489 | 116,682 | 108,639 | 99% | 107% | 106% |
| | 2007 | 122,402 | 107,311 | 105,385 | 114% | 102% | 116% |
| | 2008 | 125,100 | 116,038 | 88,012 | 108% | 132% | 142% |
| | 2009 | 119,892 | 91,391 | 87,365 | 131% | 105% | 137% |
| | 2010 | 119,953 | 118,891 | 201,334 | 101% | 59% | 60% |
| | 2011 | 353,646 | 284,604 | 178,224 | 124% | 160% | 198% |
| | 2012 | 107,738 | 93,652 | 69,530 | 115% | 135% | 155% |
| | 2013 | 70,178 | 73,584 | 103,422 | 95% | 71% | 68% |
| | 2014 | 131,118 | 118,361 | | 111% | | |
| | AVG. | | | | 111% | 93% | 102% |
| NKS[1] (Nooksack Spring) | 1999 | 1,068 | NA | NA | NA | NA | NA |
| | 2000 | 834 | NA | NA | NA | NA | NA |
| | 2001 | 982 | NA | NA | NA | NA | NA |
| | 2002 | 1,216 | NA | NA | NA | NA | NA |
| | 2003 | 1,301 | NA | NA | NA | NA | NA |
| | 2004 | 1,708 | NA | NA | NA | NA | NA |
| | 2005 | 1,549 | NA | 330 | NA | NA | 469% |
| | 2006 | 583 | 677 | 630 | 86% | 107% | 93% |
| | 2007 | 582 | 575 | 334 | 101% | 172% | 174% |
| | 2008 | 371 | 378 | 351 | 98% | 108% | 106% |
| | 2009 | 336 | 315 | 291 | 107% | 108% | 115% |
| | 2010 | 374 | 390 | 390 | 96% | 100% | 96% |
| | 2011 | 340 | 309 | 309 | 110% | 100% | 110% |
| | 2012 | 271 | 243 | 1,236 | 112% | 20% | 22% |
| | 2013 | 1,331 | NA | NA | NA | NA | NA |
| | 2014 | 1,361 | 1,273 | | 107% | | |
| | AVG. | | | | 102% | 102% | 148% |

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Appendix J1. Page 4 of 9.

| Stock | Year | Model Forecast | Agency Forecast | Postseason Return | Model Fcst/ Agency Fcst | Agency Fcst/ Postseason | Model Fcst/ Postseason |
|---|---|---|---|---|---|---|---|
| NKF[2] (Nooksack/ Samish Fall Fingerling) | 1999 | 27,472 | 27,000 | 27,000 | 102% | 100% | 102% |
| | 2000 | 21,277 | 19,000 | 24,000 | 112% | 79% | 89% |
| | 2001 | 33,974 | 36,450 | 36,450 | 93% | 100% | 93% |
| | 2002 | 50,361 | 54,420 | 53,310 | 93% | 102% | 94% |
| | 2003 | 48,259 | 45,750 | 45,750 | 105% | 100% | 105% |
| | 2004 | 37,980 | 34,200 | 17,803 | 111% | 192% | 213% |
| | 2005 | 19,808 | 19,523 | 14,841 | 101% | 132% | 133% |
| | 2006 | 16,795 | 16,899 | 30,591 | 99% | 55% | 55% |
| | 2007 | 22,086 | 18,834 | 23,485 | 117% | 80% | 94% |
| | 2008 | 34,392 | 35,271 | 28,969 | 98% | 122% | 119% |
| | 2009 | 26,072 | 23,014 | 21,548 | 113% | 107% | 121% |
| | 2010 | 32,061 | 32,627 | 32,627 | 98% | 100% | 98% |
| | 2011 | 39,144 | 37,902 | 37,975 | 81% | 100% | 103% |
| | 2012 | 45,719 | 43,973 | 41,832 | 104% | 105% | 109% |
| | 2013 | 50,065 | 48,257 | 42,068 | 104% | 115% | 119% |
| | 2014 | 46,771 | 44,046 | | 106% | | |
| | AVG. | | | | 102% | 106% | 110% |
| SNO[2] (Snohomish Wild) | 1999 | 5,823 | 5,600 | 5,600 | 104% | 100% | 104% |
| | 2000 | 5,997 | 6,000 | 6,000 | 100% | 100% | 100% |
| | 2001 | 5,876 | 5,760 | 5,760 | 102% | 100% | 102% |
| | 2002 | 6,524 | 6,700 | 7,245 | 97% | 92% | 90% |
| | 2003 | 6,033 | 5,450 | 5,450 | 111% | 100% | 111% |
| | 2004 | 12,845 | 15,700 | 10,830 | 82% | 145% | 119% |
| | 2005 | 10,161 | NA | 4,612 | NA | NA | 220% |
| | 2006 | 7,824 | 8,729 | 8,438 | 90% | 103% | 93% |
| | 2007 | 11,153 | 12,289 | 4,005 | 91% | 307% | 278% |
| | 2008 | 6,103 | 6,541 | 8,490 | 93% | 77% | 72% |
| | 2009 | 8,503 | 8,410 | 2,391 | 101% | 352% | 356% |
| | 2010 | 8,050 | 9,858 | 9,858 | 82% | 100% | 82% |
| | 2011 | 8,281 | 7,600 | 1,192 | 109% | 638% | 695% |
| | 2012 | 2,506 | 2,775 | 5,355 | 90% | 52% | 47% |
| | 2013 | 3,835 | 3,161 | 3,294 | 121% | 96% | 116% |
| | 2014 | 3,416 | 3,327 | | 103% | | |
| | AVG. | | | | 98% | 169% | 172% |
| SKG[2] (Skagit Summer/ Fall Wild) | 1999 | 9,107 | 7,600 | 7,600 | 120% | 100% | 120% |
| | 2000 | 6,988 | 7,300 | 16,843 | 96% | 43% | 41% |
| | 2001 | 9,064 | 9,183 | 14,005 | 99% | 66% | 65% |
| | 2002 | 12,635 | 13,455 | 19,807 | 94% | 68% | 64% |
| | 2003 | 11,906 | 11,348 | 11,348 | 105% | 100% | 105% |
| | 2004 | 18,761 | 20,359 | 21,757 | 92% | 94% | 86% |
| | 2005 | 16,220 | 19,493 | 21,555 | 83% | 90% | 75% |
| | 2006 | 22,402 | 21,811 | 21,246 | 103% | 103% | 105% |
| | 2007 | 12,324 | 14,252 | 12,868 | 86% | 111% | 96% |
| | 2008 | 18,598 | 18,302 | 14,035 | 102% | 130% | 133% |
| | 2009 | 22,193 | 20,400 | 10,989 | 109% | 186% | 202% |
| | 2010 | 9,894 | 11,853 | 7,926 | 83% | 150% | 125% |
| | 2011 | 12,556 | 13,044 | 8,382 | 96% | 156% | 150% |
| | 2012 | 10,020 | 8,337 | 8,337 | 120% | 100% | 120% |
| | 2013 | 7,287 | 13,018 | 13,312 | 56% | 98% | 55% |
| | 2014 | 15,221 | 17,874 | | 85% | | |
| | AVG. | | | | 96% | 106% | 103% |

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Appendix J1. Page 5 of 9.

| Stock | Year | Model Forecast | Agency Forecast | Postseason Return | Model Fcst/ Agency Fcst | Agency Fcst/ Postseason | Model Fcst/ Postseason |
|---|---|---|---|---|---|---|---|
| PSN[2] (Puget Sound Natural) | 1999 | 28,800 | 28,400 | 28,400 | 101% | 100% | 101% |
| | 2000 | 15,364 | 10,000 | 20,050 | 154% | 50% | 77% |
| | 2001 | 19,938 | 18,900 | 18,900 | 105% | 100% | 105% |
| | 2002 | 20,008 | 19,801 | 21,477 | 101% | 92% | 93% |
| | 2003 | 25,743 | 26,600 | 26,600 | 97% | 100% | 97% |
| | 2004 | 24,616 | 23,200 | 33,333 | 106% | 70% | 74% |
| | 2005 | 22,208 | 17,715 | 13,394 | 125% | 132% | 166% |
| | 2006 | 20,182 | 21,301 | 23,555 | 95% | 90% | 86% |
| | 2007 | 18,964 | 17,014 | 22,670 | 111% | 75% | 84% |
| | 2008 | 23,118 | 21,100 | 23,193 | 110% | 91% | 100% |
| | 2009 | 24,698 | 23,073 | 8,305 | 107% | 278% | 297% |
| | 2010 | 14,734 | 15,128 | 19,491 | 97% | 78% | 76% |
| | 2011 | 18,115 | 15,997 | 11,659 | 113% | 137% | 155% |
| | 2012 | 14,396 | 13,860 | 17,594 | 104% | 79% | 82% |
| | 2013 | 12,079 | 8,767 | NA | 138% | NA | NA |
| | 2014 | 9,253 | 8,125 | | 114% | | |
| | AVG. | | | | 111% | 105% | 114% |
| STL[1] (Stillaguamish Summer/Fall Wild) | 1999 | 1,332 | NA | 1,098 | NA | NA | 121% |
| | 2000 | 1,370 | 1,500 | 1,457 | 91% | 91% | 94% |
| | 2001 | 1,328 | 1,360 | 1,360 | 98% | 98% | 98% |
| | 2002 | 1,372 | 1,449 | 1,588 | 95% | 91% | 86% |
| | 2003 | 1,860 | 2,050 | 2,050 | 91% | 207% | 91% |
| | 2004 | 1,795 | NA | 1,506 | NA | NA | 119% |
| | 2005 | 1,377 | NA | 963 | NA | NA | 143% |
| | 2006 | 1,113 | 1,169 | 1,254 | 95% | 92% | 89% |
| | 2007 | 1,424 | 1,510 | 785 | 94% | 192% | 181% |
| | 2008 | 689 | 637 | 1,800 | 108% | 35% | 38% |
| | 2009 | 1,268 | 1,086 | 1,001 | 117% | 108% | 127% |
| | 2010 | 898 | 817 | 817 | 110% | 100% | 110% |
| | 2011 | 812 | 783 | 1,017 | 104% | 77% | 80% |
| | 2012 | 569 | 395 | 1,534 | 144% | 26% | 37% |
| | 2013 | 1,393 | 1,328 | 854 | 105% | 156% | 163% |
| | 2014 | 1,000 | 850 | | 118% | | |
| | AVG. | | | | 105% | 106% | 105% |
| PSF+PSY[2] (Puget Sound Fingerling + Yearling) | 1999 | 66,876 | 69,285 | 97,685 | 97% | 71% | 68% |
| | 2000 | 67,306 | 69,800 | 125,850 | 96% | 55% | 53% |
| | 2001 | 102,899 | 105,955 | 124,855 | 97% | 85% | 82% |
| | 2002 | 114,889 | 124,608 | 92,234 | 92% | 135% | 125% |
| | 2003 | 114,275 | 133,850 | 160,450 | 85% | 83% | 71% |
| | 2004 | 127,902 | 132,300 | 130,922 | 97% | 101% | 98% |
| | 2005 | 104,084 | 110,542 | 114,814 | 94% | 96% | 91% |
| | 2006 | 107,292 | 113,486 | 141,591 | 95% | 80% | 76% |
| | 2007 | 127,115 | 135,714 | 201,012 | 94% | 68% | 63% |
| | 2008 | 166,071 | 159,200 | 161,118 | 104% | 99% | 103% |
| | 2009 | 138,299 | 133,187 | 121,132 | 104% | 110% | 114% |
| | 2010 | 138,238 | 140,074 | 181,842 | 99% | 77% | 76% |
| | 2011 | 172,415 | 168,642 | 142,763 | 102% | 118% | 121% |
| | 2012 | 153,462 | 153,989 | 195,888 | 100% | 79% | 78% |
| | 2013 | 189,645 | 184,783 | 171,004 | 103% | 108% | 111% |
| | 2014 | 191,307 | 188,039 | | 102% | | |
| | AVG. | | | | 97% | 91% | 89% |

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Appendix J1. Page 6 of 9.

| Stock | Year | Model Forecast | Agency Forecast | Postseason Return | Model Fcst/ Agency Fcst | Agency Fcst/ Postseason | Model Fcst/ Postseason |
|---|---|---|---|---|---|---|---|
| WCN[2] (Washington Coastal Natural) | 1999 | 42,129 | 43,780 | 27,945 | 96% | 175% | 151% |
| | 2000 | 34,741 | NA | 27,290 | NA | NA | 127% |
| | 2001 | 34,563 | 35,306 | 27,978 | 98% | 99% | 124% |
| | 2002 | 33,902 | 33,489 | 33,489 | 101% | 90% | 101% |
| | 2003 | 32,785 | NA | 25,479 | NA | NA | 129% |
| | 2004 | 28,185 | NA | 29,715 | NA | NA | 95% |
| | 2005 | 34,857 | NA | 37,255 | NA | NA | 94% |
| | 2006 | 43,866 | NA | 34,150 | NA | NA | 128% |
| | 2007 | 35,695 | 32,362 | 36,499 | 110% | 89% | 98% |
| | 2008 | 32,187 | 26,923 | 39,246 | 120% | 69% | 82% |
| | 2009 | 35,485 | 31,318 | 38,616 | 113% | 81% | 92% |
| | 2010 | 39,215 | NA | 31,783 | NA | NA | 123% |
| | 2011 | 32,205 | NA | 43,925 | NA | NA | 73% |
| | 2012 | 45,153 | 41,500 | 27,812 | 109% | 149% | 162% |
| | 2013 | 35,464 | 34,023 | NA | 104% | NA | NA |
| | 2014 | 44,952 | 46,275 | | 97% | | |
| | AVG. | | | | 105% | 107% | 113% |
| WCH[2] (Washington Coastal Hatchery) | 1999 | 35,239 | 42,752 | 8,964 | 82% | 292% | 393% |
| | 2000 | 16,244 | NA | 14,447 | NA | NA | 112% |
| | 2001 | 15,792 | NA | 22,859 | NA | NA | 69% |
| | 2002 | 23,678 | NA | 21,351 | NA | NA | 111% |
| | 2003 | 20,755 | 18,222 | 25,812 | 114% | 44% | 80% |
| | 2004 | 28,900 | NA | 24,406 | NA | NA | 118% |
| | 2005 | 28,626 | NA | 32,421 | NA | NA | 88% |
| | 2006 | 36,950 | NA | 38,633 | NA | NA | 96% |
| | 2007 | 41,801 | 40,497 | 35,880 | 103% | 113% | 117% |
| | 2008 | 34,841 | 31,251 | 36,568 | 111% | 85% | 95% |
| | 2009 | 41,756 | 42,595 | 36,908 | 98% | 115% | 113% |
| | 2010 | 38,347 | NA | 35,638 | NA | NA | 108% |
| | 2011 | 38,208 | NA | 38,810 | NA | NA | 98% |
| | 2012 | 45,128 | 44,300 | 43,545 | 102% | 102% | 104% |
| | 2013 | 33,629 | 25,304 | NA | 133% | NA | NA |
| | 2014 | 40,866 | 42,907 | | 95% | | |
| | AVG. | | | | 105% | 125% | 122% |
| CWS[2] (Cowlitz Spring) | 1999 | 3,363 | 3,950 | 4,296 | 85% | 92% | 78% |
| | 2000 | 4,597 | 6,050 | 5,598 | 76% | 108% | 82% |
| | 2001 | 3,891 | 4,849 | 5,508 | 80% | 88% | 71% |
| | 2002 | 5,126 | 6,800 | 9,910 | 75% | 69% | 52% |
| | 2003 | 8,821 | 11,700 | 22,691 | 75% | 52% | 39% |
| | 2004 | 18,106 | 27,350 | 32,344 | 66% | 85% | 56% |
| | 2005 | 16,291 | 24,850 | 15,700 | 66% | 158% | 104% |
| | 2006 | 10,699 | 15,250 | 20,081 | 70% | 76% | 53% |
| | 2007 | 8,946 | 10,600 | 11,959 | 84% | 89% | 75% |
| | 2008 | 8,185 | 12,400 | 6,741 | 66% | 184% | 121% |
| | 2009 | 5,122 | 14,400 | 7,183 | 36% | 200% | 71% |
| | 2010 | 14,459 | 19,409 | 12,410 | 74% | 156% | 117% |
| | 2011 | 8,427 | 10,602 | 6,264 | 79% | 169% | 135% |
| | 2012 | 7,733 | 8,724 | 11,627 | 89% | 75% | 67% |
| | 2013 | 9,348 | 7,727 | 12,147 | 121% | 64% | 77% |
| | 2014 | 9,569 | 9,400 | | 102% | | |
| | AVG. | | | | 78% | 111% | 80% |

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Appendix J1. Page 7 of 9.

| Stock | Year | Model Forecast | Agency Forecast | Postseason Return | Model Fcst/ Agency Fcst | Agency Fcst/ Postseason | Model Fcst/ Postseason |
|---|---|---|---|---|---|---|---|
| WSH[2] (Willamette Spring) | 1999 | 46,187 | 49,875 | 55,801 | 93% | 89% | 83% |
| | 2000 | 57,202 | 61,211 | 55,900 | 93% | 110% | 102% |
| | 2001 | 59,207 | 59,600 | 84,000 | 99% | 71% | 70% |
| | 2002 | 73,151 | 77,434 | 127,200 | 94% | 61% | 58% |
| | 2003 | 108,530 | 112,521 | 129,700 | 96% | 87% | 84% |
| | 2004 | 113,708 | 112,701 | 112,701 | 101% | 100% | 101% |
| | 2005 | 105,111 | 122,280 | 59,500 | 86% | 206% | 177% |
| | 2006 | 48,880 | 52,388 | 52,388 | 93% | 100% | 93% |
| | 2007 | 44,542 | 61,071 | 44,509 | 73% | 137% | 100% |
| | 2008 | 20,185 | 40,851 | 40,050 | 49% | 102% | 50% |
| | 2009 | 44,161 | 41,205 | 38,110 | 107% | 108% | 116% |
| | 2010 | 70,960 | 66,360 | 119,114 | 107% | 56% | 60% |
| | 2011 | 117,375 | 109,600 | 84,603 | 107% | 130% | 139% |
| | 2012 | 105,098 | 88,202 | 70,153 | 119% | 126% | 150% |
| | 2013 | 58,436 | 65,982 | 53,062 | 89% | 124% | 110% |
| | 2014 | 58,496 | 64,189 | | 91% | | |
| | AVG. | | | | 94% | 107% | 99% |
| SUM[2] (Columbia River Summer) | 1999 | 21,651 | 20,900 | 22,276 | 104% | 94% | 97% |
| | 2000 | 27,214 | 28,038 | 30,700 | 97% | 91% | 89% |
| | 2001 | 27,029 | 24,500 | 54,521 | 110% | 45% | 50% |
| | 2002 | 70,290 | 77,700 | 129,000 | 90% | 60% | 54% |
| | 2003 | 97,280 | 87,600 | 83,084 | 111% | 105% | 117% |
| | 2004 | 83,246 | 78,569 | 65,446 | 106% | 120% | 127% |
| | 2005 | 66,190 | 62,400 | 60,060 | 106% | 104% | 110% |
| | 2006 | 75,848 | 78,512 | 78,196 | 97% | 100% | 97% |
| | 2007 | 56,948 | 45,555 | 37,200 | 125% | 122% | 153% |
| | 2008 | 50,171 | 52,000 | 55,500 | 96% | 94% | 90% |
| | 2009 | 68,114 | 70,700 | 53,878 | 96% | 131% | 126% |
| | 2010 | 81,403 | 88,800 | 72,364 | 92% | 123% | 112% |
| | 2011 | 89,000 | 91,900 | 80,574 | 97% | 114% | 110% |
| | 2012 | 91,202 | 91,200 | 58,300 | 100% | 156% | 156% |
| | 2013 | 72,042 | 73,500 | 67,570 | 98% | 109% | 107% |
| | 2014 | 69,644 | 67,500 | | 103% | | |
| | AVG. | | | | 102% | 105% | 106% |
| BON+CWF[2] (Bonneville + Cowlitz Hatcheries) | 1999 | 26,651 | 34,800 | 37,300 | 77% | 93% | 71% |
| | 2000 | 17,095 | 23,700 | 27,000 | 72% | 88% | 63% |
| | 2001 | 28,732 | 32,200 | 94,200 | 89% | 34% | 31% |
| | 2002 | 100,401 | 137,600 | 156,400 | 73% | 88% | 64% |
| | 2003 | 100,196 | 115,900 | 154,983 | 86% | 75% | 65% |
| | 2004 | 64,696 | 77,100 | 108,300 | 84% | 71% | 60% |
| | 2005 | 65,971 | 74,100 | 77,799 | 89% | 95% | 85% |
| | 2006 | 49,173 | 55,800 | 58,317 | 88% | 96% | 84% |
| | 2007 | 49,219 | 54,900 | 32,689 | 90% | 168% | 151% |
| | 2008 | 58,557 | 59,000 | 60,268 | 99% | 98% | 97% |
| | 2009 | 91,519 | 88,800 | 76,738 | 103% | 116% | 119% |
| | 2010 | 95,581 | 90,600 | 103,055 | 105% | 88% | 93% |
| | 2011 | 139,873 | 133,430 | 108,961 | 105% | 122% | 128% |
| | 2012 | 132,629 | 126,999 | 84,798 | 104% | 150% | 156% |
| | 2013 | 86,456 | 94,600 | 193,759 | 91% | 49% | 45% |
| | 2014 | 219,085 | 110,000 | | 199% | | |
| | AVG. | | | | 97% | 95% | 87% |

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Appendix J1. Page 8 of 9.

| Stock | Year | Model Forecast | Agency Forecast | Postseason Return | Model Fcst/ Agency Fcst | Agency Fcst/ Postseason | Model Fcst/ Postseason |
|---|---|---|---|---|---|---|---|
| SPR[2] (Spring Creek Hatchery) | 1999 | 62,831 | 65,800 | 49,200 | 95% | 134% | 128% |
| | 2000 | 17,335 | 21,900 | 20,100 | 79% | 109% | 86% |
| | 2001 | 56,089 | 56,600 | 125,000 | 99% | 45% | 45% |
| | 2002 | 153,070 | 144,400 | 160,900 | 106% | 90% | 95% |
| | 2003 | 89,116 | 96,900 | 180,600 | 92% | 54% | 49% |
| | 2004 | 124,820 | 138,000 | 175,300 | 90% | 79% | 71% |
| | 2005 | 92,021 | 114,100 | 93,145 | 81% | 122% | 99% |
| | 2006 | 43,421 | 50,000 | 27,918 | 87% | 179% | 156% |
| | 2007 | 19,421 | 21,800 | 14,583 | 89% | 149% | 133% |
| | 2008 | 87,109 | 87,200 | 79,433 | 100% | 110% | 110% |
| | 2009 | 46,652 | 59,300 | 48,970 | 79% | 121% | 95% |
| | 2010 | 167,251 | 169,000 | 130,768 | 99% | 129% | 128% |
| | 2011 | 105,900 | 116,400 | 70,577 | 91% | 165% | 150% |
| | 2012 | 72,135 | 63,800 | 56,766 | 113% | 112% | 127% |
| | 2013 | 36,276 | 38,000 | 86,569 | 95% | 44% | 42% |
| | 2014 | 108,724 | 115,100 | | 94% | | |
| | AVG. | | | | 93% | 110% | 101% |
| URB[2] (Columbia Upriver Bright) | 1999 | 173,866 | 147,500 | 166,700 | 118% | 88% | 104% |
| | 2000 | 212,317 | 171,100 | 155,900 | 124% | 110% | 136% |
| | 2001 | 150,973 | 127,200 | 232,500 | 119% | 55% | 65% |
| | 2002 | 249,721 | 281,000 | 276,900 | 89% | 101% | 90% |
| | 2003 | 246,890 | 280,400 | 373,200 | 88% | 75% | 66% |
| | 2004 | 246,943 | 292,200 | 367,900 | 85% | 79% | 67% |
| | 2005 | 318,535 | 352,200 | 268,744 | 90% | 131% | 119% |
| | 2006 | 231,319 | 253,900 | 227,535 | 91% | 112% | 102% |
| | 2007 | 168,594 | 182,400 | 114,491 | 92% | 159% | 147% |
| | 2008 | 151,839 | 162,500 | 196,881 | 93% | 83% | 77% |
| | 2009 | 259,415 | 259,900 | 212,047 | 100% | 123% | 122% |
| | 2010 | 296,816 | 310,800 | 324,908 | 96% | 96% | 91% |
| | 2011 | 388,138 | 398,200 | 322,234 | 97% | 124% | 120% |
| | 2012 | 365,693 | 353,500 | 294,947 | 103% | 120% | 124% |
| | 2013 | 437,422 | 432,500 | 784,117 | 101% | 55% | 56% |
| | 2014 | 874,989 | 973,300 | | 90% | | |
| | AVG. | | | | 99% | 101% | 99% |
| LYF[1] (SNAke River Wild) | 1999 | 542 | NA | 1,631 | NA | NA | 33% |
| | 2000 | 1,243 | NA | 900 | NA | NA | 138% |
| | 2001 | 733 | 734 | 2,652 | 100% | 14% | 28% |
| | 2002 | 2,066 | NA | 2,185 | NA | NA | 95% |
| | 2003 | 2,493 | 2,185 | 3,895 | 114% | 56% | 64% |
| | 2004 | 4,323 | 3,725 | 4,000 | 116% | 93% | 108% |
| | 2005 | 4,453 | 4,000 | 3,454 | 111% | 116% | 129% |
| | 2006 | 8,285 | 3,500 | 2,743 | 237% | 128% | 302% |
| | 2007 | 3,128 | 2,700 | 2,016 | 116% | 134% | 155% |
| | 2008 | 2,718 | 2,534 | 1,598 | 107% | 159% | 170% |
| | 2009 | 5,743 | 6,952 | 1,430 | 83% | 486% | 402% |
| | 2010 | 2,609 | 2,610 | 9,583 | 100% | 27% | 27% |
| | 2011 | 9,199 | 8,006 | 9,215 | 115% | 87% | 100% |
| | 2012 | 10,401 | 8,683 | 11,115 | 120% | 78% | 94% |
| | 2013 | 15,154 | 14,900 | 21,124 | 102% | 71% | 72% |
| | 2014 | 31,106 | 31,642 | | 98% | | |
| | AVG. | | | | 117% | 121% | 128% |

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Appendix J1. Page 9 of 9.

| Stock | Year | Model Forecast | Agency Forecast | Postseason Return | Model Fcst/ Agency Fcst | Agency Fcst/ Postseason | Model Fcst/ Postseason |
|---|---|---|---|---|---|---|---|
| MCB[2] (Mid-Columbia Bright) | 1999 | 37,997 | 38,300 | 50,100 | 99% | 76% | 76% |
| | 2000 | 53,460 | 50,600 | 36,800 | 106% | 138% | 145% |
| | 2001 | 45,055 | 43,500 | 66,400 | 104% | 66% | 68% |
| | 2002 | 102,085 | 96,200 | 108,300 | 106% | 89% | 94% |
| | 2003 | 126,698 | 104,800 | 150,300 | 121% | 70% | 84% |
| | 2004 | 94,895 | 90,400 | 117,600 | 105% | 77% | 81% |
| | 2005 | 93,837 | 89,400 | 97,900 | 105% | 91% | 96% |
| | 2006 | 90,780 | 88,300 | 80,471 | 103% | 110% | 113% |
| | 2007 | 77,470 | 68,000 | 47,106 | 114% | 144% | 164% |
| | 2008 | 59,481 | 54,000 | 75,489 | 110% | 72% | 79% |
| | 2009 | 99,685 | 94,400 | 73,069 | 106% | 129% | 136% |
| | 2010 | 82,454 | 72,600 | 78,937 | 114% | 92% | 104% |
| | 2011 | 108,005 | 100,000 | 87,263 | 108% | 115% | 124% |
| | 2012 | 100,809 | 90,800 | 61,850 | 111% | 147% | 163% |
| | 2013 | 113,333 | 105,200 | 243,434 | 108% | 43% | 47% |
| | 2014 | 377,357 | 360,100 | | 105% | | |
| | AVG. | | | | 108% | 97% | 105% |
| LRW[2] (Lewis River Wild) | 1999 | 3,072 | 2,600 | 3,400 | 118% | 76% | 90% |
| | 2000 | 4,053 | 3,500 | 10,200 | 116% | 34% | 40% |
| | 2001 | 16,574 | 16,700 | 15,700 | 99% | 106% | 106% |
| | 2002 | 18,910 | 18,200 | 24,900 | 104% | 73% | 76% |
| | 2003 | 25,820 | 24,600 | 25,900 | 105% | 95% | 100% |
| | 2004 | 24,590 | 24,100 | 21,200 | 102% | 114% | 116% |
| | 2005 | 21,937 | 20,200 | 16,767 | 109% | 120% | 131% |
| | 2006 | 19,818 | 16,600 | 17,896 | 119% | 93% | 111% |
| | 2007 | 10,306 | 10,100 | 4,276 | 102% | 236% | 241% |
| | 2008 | 4,479 | 3,800 | 7,120 | 118% | 53% | 63% |
| | 2009 | 9,363 | 8,500 | 7,533 | 110% | 113% | 124% |
| | 2010 | 11,034 | 9,700 | 10,862 | 114% | 89% | 102% |
| | 2011 | 13,429 | 12,500 | 15,180 | 107% | 82% | 88% |
| | 2012 | 17,806 | 16,200 | 13,926 | 110% | 116% | 128% |
| | 2013 | 16,713 | 14,200 | 25,841 | 118% | 55% | 65% |
| | 2014 | 42,365 | 34,200 | | 124% | | |
| | AVG. | | | | 111% | 97% | 105% |
| ORC[1] (Oregon Coastal) | 1999 | 65,338 | 72,084 | 66,039 | 91% | 109% | 99% |
| | 2000 | 61,457 | 63,259 | 52,889 | 97% | 120% | 116% |
| | 2001 | 58,062 | 66,412 | 100,548 | 87% | 66% | 58% |
| | 2002 | 73,055 | 73,914 | 149,649 | 99% | 49% | 49% |
| | 2003 | 101,310 | 85,483 | 145,302 | 119% | 59% | 70% |
| | 2004 | 135,716 | 131,904 | 129,579 | 103% | 102% | 105% |
| | 2005 | 133,886 | 167,213 | 167,211 | 80% | 100% | 80% |
| | 2006 | 125,550 | 136,373 | 112,797 | 92% | 121% | 111% |
| | 2007 | 108,338 | 131,195 | 47,011 | 83% | 279% | 230% |
| | 2008 | 53,417 | 70,101 | 39,615 | 76% | 177% | 135% |
| | 2009 | 32,254 | 48,072 | 41,800 | 67% | 115% | 77% |
| | 2010 | 51,234 | 59,806 | 64,799 | 86% | 92% | 79% |
| | 2011 | 73,043 | 78,199 | 87,646 | 93% | 89% | 83% |
| | 2012 | 82,789 | 80,749 | 87,540 | 103% | 92% | 95% |
| | 2013 | 70,385 | 80,095 | 95,594 | 88% | 84% | 74% |
| | 2014 | 81,984 | 109,029 | | 75% | | |
| | AVG. | | | | 90% | 110% | 97% |

[1] Escapement, [2] Terminal Run; 3 Puget Sound run sizes for 2013 are preliminary postseason projections based on partial return information;
**Note that model forecasts are from separate yearly calibrations, not a time series from the recent calibration**

[1] Escapement, [2] Terminal Run; 3 Puget Sound run sizes for 2013 are preliminary postseason projections based on partial return information;
**Note that model forecasts are from separate yearly calibrations, not a time series from the recent calibration**

# APPENDIX K: ISSUES WITH ERA AND MODEL CALIBRATION

**Changes to data and analysis involved in the ERA**

In 2014, a standardized fishery structure of 186 fisheries across all PST jurisdictions was implemented in the CAS database for the ERA. Formerly, the fishery structure used to create the Cfiles, a text file summarizing the estimated recoveries for an individual CWT, was agency-specific. Implementation of the expanded fishery strata required extensive review and modifications to the fishery definition tables in the CAS database. Three strata for escapement complete the output to the Cfiles for a total of 189 reporting strata. Two of the categories are new in 2014 and are described later.

The 189 Cfile reporting strata were mapped to a reduced total of 69 PSC reporting strata for output from the cohort analysis procedure. The 69 reporting strata (with escapement to the stream of origin being the 69th) was an increase from the previous 33 strata. The expanded reporting strata allowed for improved definition of stock-specific terminal fisheries, as well as country-specific designation of the true terminal fisheries for each CWT indicator. Previously, terminal freshwater fishery impacts were grouped under a single *terminal sport* or *terminal net* fishery regardless of whether the impacts occurred in the watershed of origin for the stock or in another watershed, or possibly even in the other country. Improved reporting strata for terminal fishery impacts will result in improved stock- and country-specific estimates of ISBM fishery impacts.

New and previously undefined strata for the estimated CWT recoveries were introduced in the list of 189 Cfile reporting strata and the 69 PSC reporting strata. These included Alaska Terminal Troll, and four categories for recoveries in freshwater areas outside of the watershed of origin (i.e., strays). The four stray categories are 1) any recovery in a freshwater fishery in Canada outside the terminal area defined for a stock, 2) any recovery in a freshwater fishery in the BC outside the terminal area defined for a stock, 3) any escapement recovery in Canada outside the stream of origin, and 4) any escapement recovery in the US outside the stream of origin. The new stray fishery and escapement reporting strata required modifications to the cohort analysis program. Modifications to the Visual Basic compute code were made so that the estimated recoveries in the stray categories were included in the estimation of the cohort sizes at age but were excluded from calculation of the true terminal fishery harvest rates. The structure of output files from the cohort analysis was modified to include the new stray categories to facilitate their use in subsequent calculations such as the ISBM indices. Formerly, if stray recoveries were included at all, and they occurred outside the other country of origin, they counted in the ISBM index of the home country.

Certain fishery strata were split into a finer scale. These included north of Falcon troll and south of Falcon troll (formerly WA/OR troll ) and QCI AABM sport, North ISBM sport, Central sport and Johnston Strait sport (formerly NCBC sport). These finer scale strata will improve separation of AABM and ISBM fishery impacts and provide information of greater utility to agencies. The new fishery strata required modifications to programs that read output files from the cohort analysis procedure. An example is the program used to generate the mortality distribution tables to correctly report AABM and ISBM impacts.

Programs that process output from the cohort analysis of the CWT recoveries also required modification to read the new expanded list of 69 PSC reporting strata and to process the stray categories as required (e.g., the program used to generate the mortality distribution tables).

DFO carried out a review of escapement data and CWT estimates for the CWT indicators which resulted in updates, mostly minor, throughout the historical time series.

A cohort analysis was completed for two new CWT indicator stocks. Results have been added for the Stikine River (STI) transboundary stock and the Middle Shuswap River stock (MSH) in the Fraser River system. New terminal marine sport fishery definitions were introduced for all four upper Fraser CWT indicators, DOM, NIC, MSH and SHU.

A complete time series of CWT estimates, including model base period years, was developed for the South Thompson First Nations net fishery occurring in Little Shuswap Lake and Shuswap River.

Estimated CWT recoveries in the lower Fraser River First Nations net fishery were reviewed and updated for all years.

The entire escapement time series for the Atnarko River summer stock (ATN/ATS) was recalibrated to the recent series of annual mark–recapture estimates and the escapement CWTs re-estimated as well. Other modifications to the cohort analysis for this stock included defining CWTs sampled from the Bella Coola large mesh gillnet fishery as terminal for all years. Auxiliary fishery files were generated containing estimates of CWTs for all terminal fisheries (marine and freshwater) for those years where either CWT sampling had not occurred or catch estimates had not been made.

DFO introduced new catch region locations (with new recovery location codes) for the Taaq-wihak Economic Opportunity fishery, a First Nations hook-and-line fishery off the west coast of Vancouver Island.

### Changes to data inputs to the Chinook Model calibration

Changes to escapement or terminal run data in the FCS (forecast) file:

- FRL – entire escapement time series outside of the base period from 1985 onwards was updated
- RBT – entire terminal run time series from 1979 onwards was reviewed and updated
- GSQ – escapement from 2008 onwards was updated
- GST – escapement time series from 2010 onwards was updated
- PSF – entire terminal run time series was updated
- LYF – escapement time series from 2005 onwards was updated

Stock-specific FP values were calculated and entered into the Northern Troll FPA file to represent changes in impacts that have occurred given the DFO management objective of limiting impacts on WCVI-origin Chinook salmon since 2000.

Three variants of the forecast for the WCVI stock aggregate were provided by Diana Dobson (DFO) this year in addition to the standard forecast. The standard forecast has been based on a fixed set of fishery scalars relative to fishery impacts observed in the 1979–1981 base period, with the expansion to the total aggregate based on high quality terminal run data available for the Somass River stock, the watershed-of-origin for the Robertson Creek CWT indicator. The decision was made by the CTC to use a variant forecast, which was based on fishery scalars reflecting recent exploitation rates, with separate expansions for each of the three large hatchery systems and the natural systems, to obtain the total aggregate forecast. The variant forecast was almost twice the magnitude of the standard forecast (216,728 vs 111,550 for the aggregate terminal return) but was considered to better represent the trends in abundance of the contributing stocks.

The agency forecast for 2013 was used as input in the model forecast (.FCS) file in place of the observed return in 2013 for some stocks. The 2013 return was not available in time for the model calibration for three of the stocks (PSN, WCH and WCN) but was available for three others (CWS, SNO and STL). The 2013 forecast and observed return for the latter stocks is as follows:

```
CWS (forecast for 2013 = 7727; 2013 observed return = 12147)
SNO (forecast for 2013 = 3161; 2013 observed return = 3294)
STL (forecast for 2013 = 1328; 2013 observed return = 854)
```

# APPENDIX L: PROGRESS REPORTS FOR INDIVIDUAL PROJECTS FUNDED IN 2013 UNDER THE CODED WIRE TAG IMPROVEMENT PROGRAM

## LIST OF APPENDIX L TABLES

Appendix L 1. Canadian coded wire tag (CWT) project expenditures for 2013–2014, approved in February, 2013. .......... 138

Appendix L 2. US CWT Project Expenditures for 2013–2014, approved in February, 2013. .......... 160

## 2013 Canada Project Reporting

Canadian FY 2013 was the last year of funding for Canadian coded wire tag implementation team (CWTIT) projects. Summaries for projects conducted in 2013 are below.

*Appendix L 1. Canadian coded wire tag (CWT) project expenditures for 2013–2014, approved in February, 2013.*

| Party | Project Category | TR25 Issue | Project Title | Cost |
|---|---|---|---|---|
| Can. | Increased CWT marking of CN indicators | 2 | Incremental tagging of 13 Indicator Stocks (Robertson Creek, Cowichan, Big Qualicum, Quinsam, Lower Shuswap, Nicola, Chilliwack, Harrison, Taku, Stikine, Kitsumkalum, Atnarko, and Philips)[1] | $347,600 |
| Can. | Increased deadpitch CWT recovery effort, all indicators | 5 | Increased effort in CWT recovery in indicator escapement programs (Quinsam, Cowichan, Big Qualicum, Harrison, Nicola, and Atnarko)[1] | $64,500 |
| Can. | Uncertainty in estimates of escapement or terminal fishery catch | 1, 6 | Atnarko Chinook CWT Indicator Stock[1] | $110,000 |
| Can. | Agency staffing (Programmer, Catch QA/QC Analyst, CWT Recovery Coordinator) | 4, 6, 7, 8, 9, 10, 11, 13, 14,15,17, 18 | Regional CWT Data System Programming, Regional CWT and Catch Estimation QA/QC, Regional Sport and First Nations Fishery CWT Recovery Coordination, and Salmonid Enhancement Database Improvements[1] | $325,000 |
| Can. | Increased head recovery costs | 2, 4, 5, 7 | CWT Head Lab Processing and Data Management[1] | $200,000 |
| Can. | Low sample rates in terminal fisheries, sport and First Nations CWT recovery improvements | 4, 7, 9, 10, 11 | Regional Commercial, Sport and First Nations Fishery CWT Recovery Improvements[1] | $277,900 |
| Can. | Low sample rates in terminal fisheries, First Nations fishery CWT recovery improvements | 4, 10 | Improvements in CWT Recovery in Terminal First Nations Fisheries ( Fraser River and Bella Coola)[1] | $85,000 |
| Can. | Low sample rates in terminal fisheries, First Nations fishery CWT recovery improvements | 4, 10 | Improvements in Catch Estimates and CWT Recovery in Terminal Recreational Fisheries[1] | $10,000 |
| Can. | Uncertainty in catch estimates and CWT expansions, data management | 10 | MRP Archive Data Recovery[1] | $20,000 |
| Can. | Low sample rates in terminal and highly mixed stock fisheries | 4, 7 | Equipment Purchase | $60,000 |
|  |  |  | ***Canada Total*** | **$1,500,000** |

[1] Multiyear projects.

**Project title:** Increased Coded Wire Tag (CWT) Marking of 9 Chinook Indicators
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $277,600
**Total CWTIT funding approved to date (if funded previously):** $1,385,100
**Continued CWTIT Funding Needed (yes, no, maybe):** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issue 2 (Determination of tagging levels)

**Project Description, Accomplishments, Results and Deliverables:** This project involved increasing CWT application and release levels on nine Chinook indicator stocks in British Columbia in order to meet precision objectives in the estimation of fishery-specific exploitation rates. Tagging levels were set based on recent survival and fishery sampling rates in order to achieve stated precision objectives. The indicator stocks that received increased tagging through this project were:

1. Robertson Creek
2. Cowichan River
3. Big Qualicum River
4. Quinsam River
5. Chilliwack River
6. Harrison River
7. Nicola River
8. Lower Shuswap River
9. Atnarko River
10. Kitsumkalum

Increased tagging was initiated on selected stocks prior to brood year 2009 (e.g., Quinsam) through other external funding sources, but comprehensive increases in tagging levels began across all stocks in brood year 2009.

To date, CWT release targets have been met for all stocks in all brood years, save for the Cowichan River in brood years 2009, 2010, and 2013 when poor escapements or flooding prevented collection of adequate broodstock for full release targets. Infrastructure improvements at DFO hatcheries that were funded through the first year of CWTIT continue to allow expanded tagging to be completed on an annual basis. Returns and catches of marked three and four-year-old adult Chinook salmon to Salmonid Enhancement Program hatcheries in 2012 and 2013 from the first three years of expanded tagging have been strong, indicating that increased CWT recoveries are likely to be observed in future years as the releases from the expanded marking continue to mature and enter the various fishery and escapement strata.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Benefits to the CWT program include increased CWT recoveries in all fishery and escapement strata for the nine Chinook indicators, which will allow for increased precision in the estimation of exploitation rates in the various fishery strata.

**Success:** This project has been successful. The increase in tags applied has resulted in direct benefits in the precision of estimates of catch and escapement. Continued funding will be required to maintain current marking levels, otherwise marking will return to pre-2009 levels.

**Project title:** Taku Chinook Fishery Monitoring and Coded Wire Tag (CWT) Application
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $30,000
**Total CWTIT funding approved to date (if funded previously):** $120,000
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25** Issue 2 (Determination of tagging levels)

**Project Description, Accomplishments, Results and Deliverables:** This project funded the application of CWTs to wild outmigrating Taku Chinook salmon juveniles and sampling and recovery of CWTs from a directed Chinook salmon fishery established in 2005. In 2013, 5,500 wild smolts were tagged but there was no directed fishery to sample.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Prior to CWTIT funds being applied to this program the fishery was not sampled. Lack of information on the fishery impacts reduced DFO's ability to evaluate exploitation rates and refine the Taku Chinook salmon escapement goal. Over the period of CWT Improvement funding, fishery sampling rates of 20–70% have been achieved. This is the sole funding source for tagging wild Taku Chinook salmon. Without continued support, emigrants will not be tagged and the fishery will not be sampled—impacting PST requirements to monitor the fishery and determine exploitation rates.

**Success**: Yes, however additional data will be available when C tagged fish return.

**Project title:** Stikine River Chinook Coded Wire Tag (CWT) Application and Tag Recovery
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $30,000
**Total CWTIT funding approved to date:** $120,000
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issue 2 (Determination of tagging levels)

**Project Description, Accomplishments, Results and Deliverables:** The objective of the project was to increase the CWT tagging and recovery levels of Stikine River Chinook salmon smolts. The specific tagging objective was an additional 35,000 Chinook salmon smolts annually. This project also funded sampling of adult returns to the Stikine River for CWTs.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** In 2013, a record 48,500 wild Stikine Chinook salmon smolts (including a key Little Tahltan stock grouping) were tagged. In addition, approximately 2% were measured for weight and length. Since the application of CWT Improvement funds, approximately 75% of the inriver fishery catch and approximately 30% of the US marine fishery catch were sampled for CWTs. Prior to CWT Improvement funding, sampling rates on Stikine River Chinook salmon were in the order of 20%.

Without continued support, CWT marking and fishery sampling rates will be significantly reduced, compromising the reliability of the CWT statistics (low precision in the CWT estimation) and stock specific estimates. Since the sunset of the CWTIT program in 2014, sampling rates declined to 30%. Some escapement monitoring continues (i.e., at the Little Tahltan weir and Verrett River spawning grounds).

Loss of CWT improvement resources impacts PST requirements to monitor fisheries (i.e., reduced CWTs in US fisheries to determine exploitation rates and lack of information to evaluate/refine Chinook salmon escapement goal).

**Success:** Yes the project has been a success; however, additional data will be available when existing tagged CWT fish return.

**Project title:** 2012–2013 Phillips River Chinook escapement estimation and increased Coded Wire Tag (CWT) application
**Program Agency:** Fisheries and Ocean Canada (DFO)
**Approved funding for this cycle:** $10,000 + 150,000 CWTs
**Total CWTIT funding approved to date:** $48,000
**Continued CWTIT Funding Needed:** Yes. Based on the recent success and increased CWT tag releases it will be key to maintain the program to ensure the recoveries of those tags in the escapement in future years.
**Objectives and Relationship to PSC Technical Report 25:** Issue 2 (Increased CWT marking of indicators), Issue 6 (Uncertainty in estimates of escapement or terminal fishery catch)

**Project Description, Accomplishments, Results and Deliverables:** There were two main objectives of this project:

1. Increase the number of CWT tag releases to 150,000 for this population.
2. Develop a mark–recapture program on a Mainland Inlet Chinook salmon population to provide accurate and precise estimates of tagged and untagged Chinook salmon escapement.

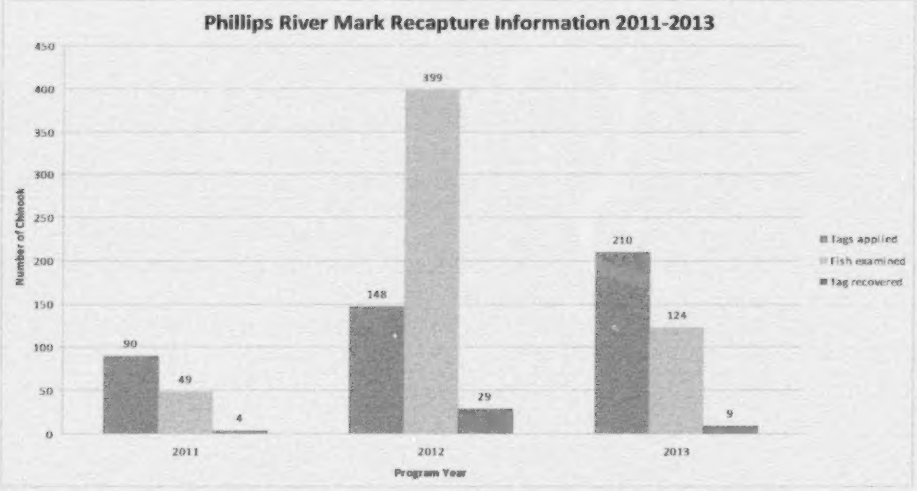
This project involved a two-stage mark–recapture of adult Chinook salmon returning to the Phillips River. Tags were applied via typical broodstock collection events and other seining in pools in the lower river and in pools above the lake in the upper river. Deadpitch activities were conducted throughout the watershed.

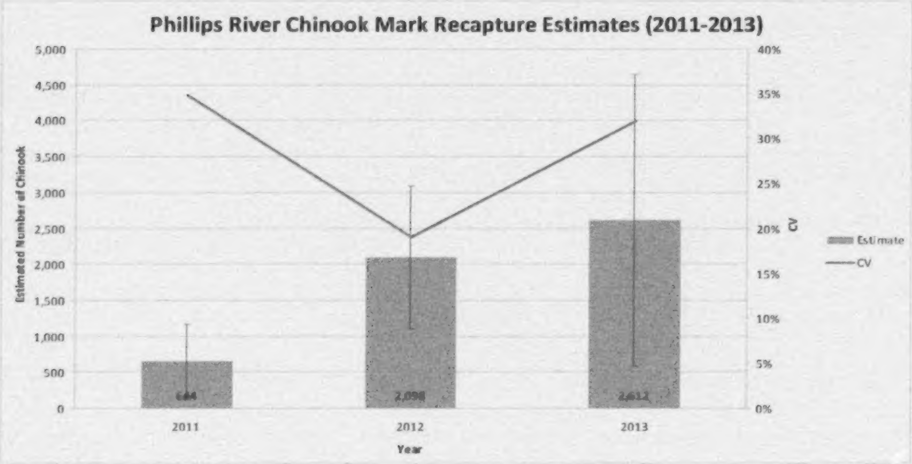
There was a significant improvement in the number of tags applied in 2013 relative to 2012; however, low river flows and increased bear activity resulted in a decrease in carcass recovery and precision for the 2013 estimate. It was also determined that the clipped contribution to the return was estimated at 22.6% (11.6% in 2012).

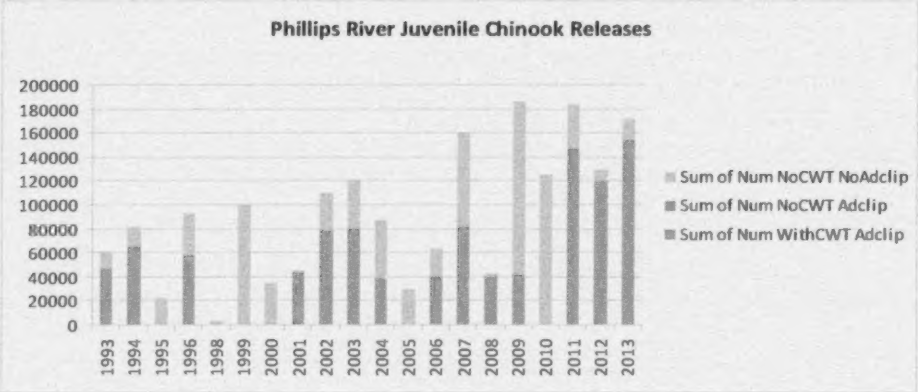
Escapement estimates have shown variable precision over the last three years of the study and brood collection in 2013 will result in the 150,000 CWT application target being met this spring for the 2014 release.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Benefits to the CWT program include the following:

1. The development of a low cost indicator program for a Chinook salmon population in the poorly monitored Mainland Inlet Area of the Southern BC coast appears feasible.
2. Over the duration of this project it has been demonstrated that we can achieve a precise estimate of Chinook salmon escapement to the Phillips River as well as clipped contribution.
3. This project has demonstrated that an increase in CWT tag releases to the level of 150,000 is achievable in this remote location.


Phillips River Mark Recapture Information 2011-2013


Phillips River Chinook Mark Recapture Estimates (2011-2013)


Phillips River Juvenile Chinook Releases

**Project title:** Regional Coded Wire Tag (CWT) Data System Programming
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $90,000
**Total CWTIT funding approved to date**: $440,000
**Continued CWTIT Funding Needed**: No
**Objectives and Relationship to PSC Technical Report 25:** Issues 13, 14, 15, 17, 18 (Timeliness of reporting, incomplete/no exchange of CWT data, Inter/intra agency coordination, Updating CWT data difficulties, Inadequate CWT validation)

**Project Description, Accomplishments, Results and Deliverables:** This project involved hiring a programmer/analyst to provide systems analysis, design and programming support to the DFO CWT program system—the Mark Recovery Program (MRP). Prior to CWTIT funding, DFO had 1 full-time programmer/analyst performing MRP development and support. This was inadequate to keep up with technology and CWT program change requirements. The objectives for the 5-year funding period were to re-engineer the DFO system using current database and web development software to develop new programs to accomplish the following:

1. Improve data through improvements to validation, corrections to data, and corrections to historical algorithms.
2. Improve data management through new data entry interfaces to the central database.
3. Improve access to information for DFO users and exports to the Regional Mark Information Centre.
4. Improve interfaces with DFO hatcheries system, catch monitoring system, and escapement systems.
5. Perform system modifications for new data sources from other CWTIT projects.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** This is the fifth and final year of funding an additional programming position to support improvements to the MRP system. Prior to CWTIT funding, DFO had a significant backlog of programming issues and was not able to meet the bilateral reporting requirements effectively, as the MRP system was a legacy Fortran system originally developed over 25 years ago. With this additional resource, DFO made significant progress in reviewing old algorithms, converting the legacy system using current technology, and developing new interfaces to improve access to the information within DFO. This has allowed DFO to meet bilateral exchange deadlines and to make improvements to data quality. Because of the rewrite of the system, it will also be more cost effective for DFO to maintain and respond to change requirements in the future. While the majority of new development work is completed, there remain opportunities to improve the efficiencies of the Canadian CWT program such as developing the capacity to digitally scan CWTs and data collection forms into an indexed archive as part of the data entry process, and integrate technology such as data logging using hand-held devices or netbooks for the collection of sampling data.

**Project title:** Regional Sport and First Nations Fishery Coded Wire Tag (CWT) Program Coordination
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $85,000
**Total CWTIT funding approved to date:** $411,400
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issues 4, 7, 9, 10, 11 (Low sample rates in terminal fisheries, Low sample rates in highly mixed stock fisheries, Nonrepresentative sampling, Incomplete coverage of fisheries or escapements, Voluntary sport fishery sampling program)

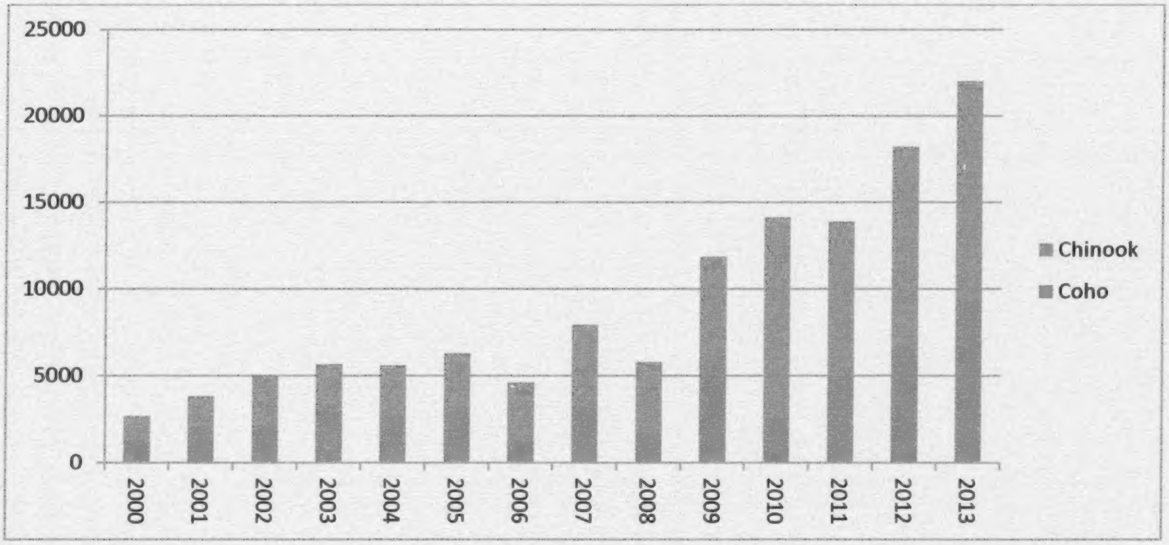
**Project Description, Accomplishments, Results and Deliverables:** This project involved hiring a senior fisheries technician to implement fisheries sampling improvements within DFO recreational and First Nations fisheries. Objectives are listed below.

1. Develop protocols and implement sampling programs to adequately represent First Nations fisheries.
2. Develop and implement program improvements to increase participation in the recreational voluntary head recovery program to increase sample rates representatively.
3. Provide technical support including design of standard operating protocols and/or infrastructure; review, implementation, and QA/QC for all aspects of CWT sampling within recreational and First Nations fisheries.
4. Promote and facilitate delivery of improvements to catch monitoring and sampling participation through communications or promotional materials.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** This is the fifth and final year of funding a fisheries technician position to make improvements to DFO sampling of recreational and First Nations fisheries. Prior to CWTIT funding, DFO had one CWT program fisheries technician to support sampling of all DFO fisheries (commercial, recreational, test and First Nations). With the addition of a second fisheries technician, DFO has made significant progress in improving sampling across all CWT fishery sampling programs in terminal areas and in mixed stock fisheries. With the increased workload associated with the oversight and delivery of recreational and First Nations sampling programs, continued funding in future years is essential to ensure that gains achieved are maintained across all DFO fishery sampling programs.

Terminal Native economic opportunity fishery sampling targets were met for Robertson Creek (Nuu-chah-nulth), BC Interior/Kamloops Lake (Secwepemc Fisheries Commision and Siska Traditions Society), and the West Coast Vancouver Island mixed stock fishery (T'aaq-wiihak). Terminal Native food, social and ceremonial fisheries sampling targets were met for Atnarko River and Robertson Creek (Hupacasalth and Tseshaht). Sampling programs were introduced and progress towards sampling targets has been made for Cowichan River, Lower Shuswap River and Harrison River indicator stocks.

Recreational Improvements can be generally viewed by reviewing the impressive increases in recreational samples since this project commenced in 2009 compared to historical results.



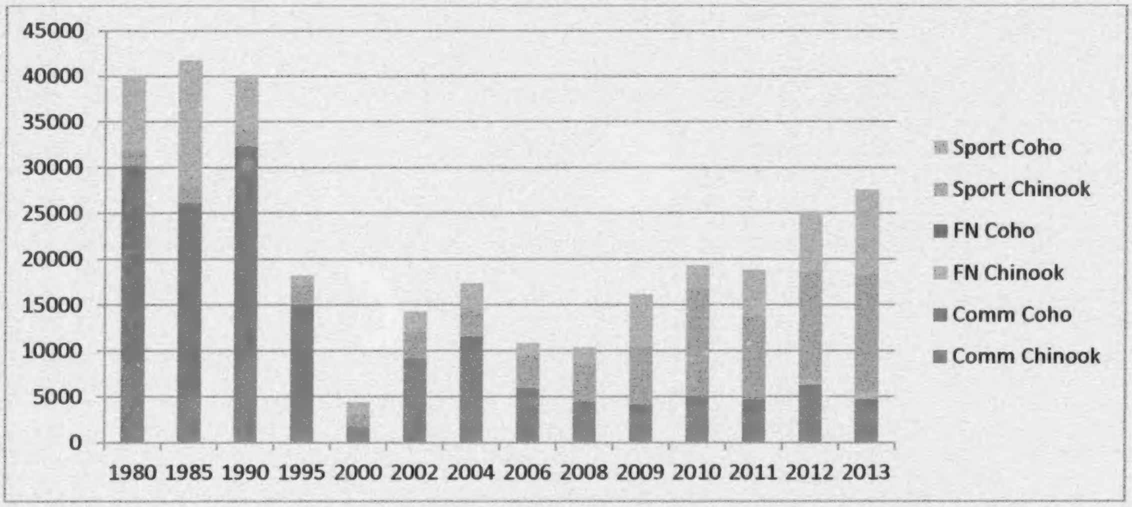
**Project title:** Coded Wire Tag (CWT) Head Lab Processing and Data Management
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $200,000
**Total CWTIT funding approved to date:** $507,000
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issues 2, 4, 5, 7, 9, 10, 11, 12 (Tagging levels, Low sample rates in escapements, Low sample rates in terminal fisheries, Low sample rates in highly mixed stock fisheries, Nonrepresentative sampling, Incomplete coverage of fisheries or escapements, Voluntary sport fishery sampling program, Sampling to facilitate mark selective fishery evaluations)

**Project Description, Accomplishments, Results and Deliverables:** This project was required to pay for increased cost to ship, dissect, and perform data entry for increased quantities of head recoveries from DFO commercial, test, recreational and First Nations fisheries and escapement sampling programs. Funding was also used to develop new processes to improve efficiencies in the head lab such as introducing barcoded head labels and reviewing and modifying standard operating procedures. Increases in quantities of heads are attributed to the implementation of other CWT improvement projects including the following:

1. Increased tag rates in fisheries as a result of bilateral increases to tagging (Issues 1–3).
2. Increased escapement CWT recovery efforts (Issue 5).
3. Increased sampling rates, in commercial, test or research fisheries (Issue 4, 7).
4. Introduction of First Nations sampling programs (Issue 4, 7, 9).
5. Improvements to Voluntary Sport Head Recovery Program, resulting in increased sampling rates (Issue 4, 7, 11).
6. Introduction of sampling of freezer troll vessels in BC fisheries to improve representative sampling in this fishery (Issue 11).
7. Sampling of unmarked Chinook salmon (double index tagged fish) to support assessment of mark selective fisheries (Issue 12).

Head Dissections of Commercial, First Nations and Sport samples in DFO Head Lab.

| | 1980 | 1985 | 1990 | 1995 | 2000 | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Commercial | 30226 | 26226 | 32301 | 15095 | 1734 | 9173 | 11595 | 6033 | 4486 | 4132 | 5094 | 4776 | 6348 | 4757 |
| Chinook | 8727 | 5048 | 9129 | 2660 | 1631 | 9025 | 10172 | 5087 | 3958 | 3335 | 4363 | 3426 | 5506 | 4038 |
| Coho | 21499 | 21178 | 23172 | 12435 | 103 | 148 | 1423 | 946 | 528 | 797 | 731 | 1350 | 842 | 719 |
| First Nations | | | | 68 | | 27 | 197 | 147 | 66 | 125 | 79 | 152 | 608 | 769 |
| Chinook | | | | 68 | | 24 | 197 | 146 | 60 | 123 | 79 | 110 | 570 | 768 |
| Coho | | | | | | 3 | | 1 | 6 | 2 | | 42 | 38 | 1 |
| Sport | 9824 | 15494 | 7731 | 3061 | 2671 | 5071 | 5584 | 4604 | 5782 | 11869 | 14127 | 13888 | 18167 | 22026 |
| Chinook | 1658 | 1797 | 1897 | 2023 | 1384 | 2938 | 2911 | 3270 | 4073 | 6259 | 11563 | 8868 | 11609 | 12776 |
| Coho | 8166 | 13697 | 5834 | 1038 | 1287 | 2133 | 2673 | 1334 | 1709 | 5610 | 2564 | 5020 | 6558 | 9250 |
| Grand Total | 40050 | 41720 | 40032 | 18224 | 4405 | 14271 | 17376 | 10784 | 10334 | 16126 | 19300 | 18816 | 25123 | 27552 |



Improvements can be generally viewed by reviewing the impressive increases in head recoveries since this project commenced in 2009 compared to historical results. Note that this table and graph does not include escapement samples (approx. 8,000 from 2009 to 2011, approx. 10,000 in 2012, approx. 14,000 in 2013).

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** This project ensures that funds and effort spent to complete other projects that increase tag recoveries of indicator stocks result in timely CWT data to support analysis. With increased head recoveries across all DFO CWT recovery programs, continued funding will be required in future years. This project also resulted in significant gains relative to the cost and throughput of samples in the DFO head lab to dissect, read and perform data entry. The cost per sample was reduced to between $4 and $6/sample (depending on source of sample), including overhead for lab space and equipment.

**Project title:** Regional Commercial, Sport and First Nations Fishery Coded Wire Tag (CWT) Recovery Improvements
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $277,900
**Total CWTIT funding approved to date:** $862,900
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issues 4, 7, 9, 10, 11, 12 (Low sample rates in terminal fisheries, Low sample rates in highly mixed stock fisheries, Nonrepresentative sampling, Incomplete coverage of fisheries or escapements, Voluntary sport fishery sampling program, Sampling to facilitate mark selective fishery evaluations)

**Project Description, Accomplishments, Results and Deliverables:** This project is a portfolio of many projects being delivered throughout DFO fisheries to make strategic improvements to CWT sampling programs and CWT data. The focus of these projects is to make improvements that can be delivered during the increased CWTIT funding period to provide a legacy of improvements that can be sustained in the future, and to maintain sampling rates at required levels. Projects include the following:

1. Expand equipment to facilitate increases in recreational and First Nations sampling (i.e., freezers, freezer boxes, closed containers for brine solution).
2. Develop a communication strategy with recreational and First Nations fishers— participations in meetings, public relations events, etc.; and develop and distribute of communication or promotional materials.
3. Onsite review of existing sampling programs in all fisheries sectors and introduction of QA/QC through ongoing audits.
4. Review, development, and production of improved data collection materials (forms, labels, sample kits).
5. Introduction of sampling of freezer troll vessels in BC fisheries to improve representative sampling in this fishery.
6. Replacement, repairs, and upgrades to sampling infrastructure requirements such as electronic sampling equipment or sampling tables for commercial fisheries
7. Deploy staff to increase service levels for pick-ups of heads from recreational and First Nations fisheries and maintain commercial fishery sample rates at required levels.

Improvements can be generally viewed by reviewing the impressive increases in head recoveries shown since this project commenced in 2009 in the tables provided under the DFO CWT Head Lab Processing and Data Management project (previous project summary).

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** This project has made improvements in the quality and quantity of CWT data that is available for use in analysis across all DFO fishery sectors. Ongoing funding is required to sustain improvements to meet required sample rates and for life-cycle replacement of equipment. Specific Improvements to sport fishery sample rates follow.

| Sport Fishery Sample Rates | 2000–2004 period | 2010–2012 period |
|---|---|---|
| Haida Gwaii/Queen Charlottes | 13% | 46% |
| West Coast Vancouver Island | 13% | 24% |
| Georgia Strait North | 31% | 37% |
| Georgia Strait South | 23% | 27% |
| Juan de Fuca | 20% | 22% |

**Project title:** Salmonid Enhancement Program Coded Wire Tag (CWT) Head Data Coordinator/Archival CWT Database Review
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $75,000
**Total CWTIT funding approved to date (if funded previously):** $142,000
**Continued CWTIT Funding Needed (yes, no, maybe):** No
**Objectives and Relationship to PSC Technical Report 25:** Issues 10, 13, 15 (Intra-agency coordination, Timeliness of reporting, Uncertainty in catch estimates and CWT expansions, Data management)

**Project Description, Accomplishments, Results and Deliverables:** This project funded the staffing of a term biologist position in the Regional Salmonid Enhancement Program sector within DFO for 12 months. 2013/2014 was the second year for this project, which had two main objectives:

1. Develop a formal set of *Best Practices* for the collection, transfer and management of CWT heads and data at all escapement projects. This includes serving as a Regional Head Data Coordinator for all escapement programs on an in-season basis.
2. Review archival escapement data from DFO enhancement programs to ensure standardized analytical techniques and data verification procedures have been employed.

Through the Regional Head Data coordinator role, this project served to provide a single point of contact to lead the annual program to collect CWT heads and deliver them to the dissection lab in a timely manner. In the course of this project, a thorough review of the current data and head transfer program was conducted, efficiencies were identified, and a complete set of *Best Practices* was developed with the goal of improving data quality and delivery time, reducing costs at the dissection lab, and streamlining operations for current DFO staff. The development of *Best Practices* in the first year of this project led to ongoing implementation work in Year 2, and will result in lasting efficiencies through ongoing implementation at all escapement projects and at the head dissection lab.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Improvements in CWT data sharing from escapement projects directly benefit the CWT program by ensuring escapement data from the most recent return year continues to be made available in time for annual CTC CWT analysis in late winter. In addition to ensuring that complete and accurate datasets are provided for analysis, improvements made in the delivery and CWT dissection system serve to reduce costs in future years for processing of escapement heads. These savings will help to offset pressures from increased CWT recoveries expected as an outcome of the CWTI program, and will provide lasting improvements in the quality and timeliness of CWT reporting.

**Success:** Overall this project has been successful. Significant progress has been made on both key objectives in this project, with completion and implementation of the Best Practices. Due to a staffing change midway through Year 2 of this project, there were challenges in maintaining ongoing CWT Program support for a short period in 2013. The position was filled shortly afterwards, but there were impacts on the deliverables for this project, specifically objective 2. It was recognized at the beginning of this project that review of all CTC indicator data would not likely be completed in the first year of this project. The staffing change resulted in a focus on the highest priority objective and a reduction in progress on objective 2.

**Project title:** Mark Recovery Program (MRP) Archive Data Recovery Project
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $20,000
**Total CWTIT funding approved to date:** $40,000
**Continued CWTIT Funding Needed:** No
**Objectives and Relationship to PSC Technical Report 25:** Issues 13, 14 (Timeliness of reporting, Incomplete/no exchange of CWT data)

**Project Description, Accomplishments, Results and Deliverables:** This project involved hiring part-time staff to review over 40 years of archived material associated with the DFO CWT program. The objectives for the funding were as follows:

1. Create an inventory of archived material.
    a. Review and classify.
    b. Identify gaps in DFO CWT information system vs source documents or CWTs.
    c. Identify data recovery projects.
2. Develop a strategy for retention. Options include data recovery/data entry, digital conversion of paper forms, archive with retention requirements established, redistribute to appropriate existing DFO staff, or destroy.
3. Perform priority data recovery, digital archival of all historical paper forms.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** This project resulted in digitization of all historical sources of data (such as recoveries from commercial, sport, test, research, or First Nations fisheries) and identification of data or fields on data records that have never been entered into the CWT system. This project also resulted in the development of new protocols for digital management of DFO CWT program records which will improve access to data for QA/QC in the future. Finally, the reduction of archived material has eliminated future expenditures by DFO for the management of large quantities of archive material and allow for these funds to be spent on CWT program delivery.

**Project title:** Operational Support for Recreational Coded Wire Tag (CWT) sampling projects
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $25,000
**Total CWTIT funding approved to date:** $94,000
**Continued CWTIT Funding Needed:** No
**Objectives and Relationship to PSC Technical Report 25:** Issues 4, 7, 9, 10, 11 (Low sample rates in terminal fisheries, Low sample rates in highly mixed stock fisheries, Nonrepresentative sampling, Incomplete coverage of fisheries or escapements, Voluntary sport fishery sampling program)

**Project Description, Accomplishments, Results and Deliverables:** This project involved hiring a seasonal junior fisheries technician to support the implementation of fisheries sampling improvements within DFO recreational fisheries. This position was supervised by the senior fisheries technician (*Regional Sport and First Nations Fishery CWT Recovery Coordination* project). Objectives were as follows:

1. Perform audit inspections and recommend improvements to Voluntary Sport Head Recovery Program Depots in Southern BC.

2. Implement specific recreational fishery sampling improvement projects in Southern BC to adequately represent recreational fisheries.
3. Perform public relations and communication with Voluntary Sport Head Recovery Program Depots or fishers in Southern BC.
4. Perform QA/QC to improve recreational sampling data.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** This is the third year of funding seasonal fisheries technicians to make improvements to DFO sampling of recreational fisheries. Prior to CWTIT funding, DFO had one CWT program fisheries technician to support sampling of all DFO fisheries. With the addition of a second fisheries technician and seasonal staff, DFO has made significant progress in improving sampling through the voluntary sport head recovery program.

**Project Title:** Campbell/Quinsam Chinook Mark–Recapture Improvements (assess bias in random mixing of carcass mark–recapture)
**Project agency:** Fisheries and Ocean Canada
**Approved funding for this cycle:** $7,500
**Total CWTIT funding approved to date:** $37,500
**Objectives and Relationship to PSC Technical Report 25:** Issue 5 (Low sample rates in escapement)

**Project Description, Accomplishments, Results and Deliverables:** CWT improvement funding was used to increase the stream area sampled for CWTs, specifically the Second Island Channel in the Campbell River (2009–2013), allowing more access to carcasses in deep pools. In addition, this project assessed the assumption in a carcass mark–recapture that the tagged and untagged carcasses mix randomly in the population. Two methods were employed and compared.

1. Carcasses were tagged and placed back where they were found (random mixing unlikely unless there was some sort of flood event after that placement).
2. Carcasses were marked and then placed into the flow of the river.

Population estimates derived using the old method were 1–16% less than new method except in 2011 (16% more). In recent years we had three very dramatically different flow conditions in order to evaluate the various release methods. Additional sampling effort and expanded spatial coverage contributed an increase in CWT recoveries on the Campbell River with only a slight reduction in sampling rate on the Quinsam River. The old method was discontinued after 2012 and the new method was been adopted. In 2013, the resources were directed at additional spatial and temporal sampling effort.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Benefits to the CWT program include an improvement in the accuracy and precision of the mark–recapture estimates of escapement, and increased sampling effort and spatial coverage on the more challenging component of the system resulted in higher CWT recoveries on the Campbell River.

**Project Title:** Improved Coded Wire Tag (CWT) Recovery, Harrison River Indicator Stock Program
**Project agency:** DFO
**Approved funding for this cycle:** $16,000
**Total CWTIT funding approved to date:** $80,000
**Objectives and Relationship to PSC Technical Report 25:** Issue 5 (Sampling rates in escapement)

**Project Description, Accomplishments, Results and Deliverables:** This project provided funding for additional effort to expand marking and recovery effort during Harrison River Chinook salmon mark–recapture study, thus increasing the sampling rate and precision of the mark–recapture estimates.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** It is difficult to quantitatively assess success due to the annually variable rates of recovery resulting from different escapements of multiple species and annually variable environmental conditions. Sampling rates are dependent on the number of carcasses present, the prevalence of carcasses of other species, fluctuating water levels, predators, and a host of other factors. Carcass sampling rates on the Harrison River tend to be hindered by high water levels and large escapements of chum salmon, which result in considerable extra effort being required to find and recover carcasses of Chinook salmon. Increased Chinook salmon carcass recoveries result from the increased sampling effort, thus improving CWT recovery rates. The relationship is not linear so at any escapement level, the net benefit will differ, but proportional benefits are greater in years of more unstable flows and larger chum salmon returns.

**Project Title:** Cowichan Chinook Assessment Enhancements
**Project agency:** DFO
**Approved funding for this cycle:** $30,000
**Total CWTIT funding approved to date:** $150,000
**Objectives and Relationship to PSC Technical Report 25:** Issue 5 (Sampling rates in escapement), Issue 6 (Uncertainty in estimates of escapement or terminal fishery catch), Issue 10 (Incomplete coverage of escapement areas)

**Project Description, Accomplishments, Results and Deliverables:** The objective of this project was to improve escapement effort and survey coverage, biosampling rates, estimates of Chinook salmon mark rates, and improve head recoveries from escapement to the Cowichan River. Escapement sampling was improved by hiring a third crew of three technicians to collect deadpitch data for the Cowichan Chinook Assessment Project. This improved escapement sampling complements increased tagging rates in Cowichan Chinook salmon. The additional crew allowed for monitoring of Chinook salmon spawning activity and deadpitch activities in more areas within the Cowichan River, outside of the main spawning reaches. In addition, a data entry technician was hired to keypunch field data from the counting fence, the deadpitch, and the broodstock removals.

In 2013 the fence was installed on September 9, later than the usual start date of Labour Day (September 3). Water levels were sufficient at the start of the enumeration fence operation and fence activities proceeded normally until the final weekend in September when a rain event increased the discharge to 100 cubic meters per second, more than twice the capacity of the fence. The fence did not recover from this event and was removed on October 21 when water flows decreased to safe levels.

With a fence count unattainable, the estimate of natural spawners was based on a carcass mark–recapture program, which was enhanced by the presence of a third deadpitch crew. Two crews began the deadpitch program on October 30, and a third crew was added on November 18. All three crews worked until the end of the project on December 12.

In 2013, 1080 carcasses were sampled, resulting in 926 scale samples, and 210 adipose fin clipped Chinook salmon (198 heads collected and submitted for processing). During the period when three crews were active, 872 carcasses were sampled, indicating that without the third crew 290 (approx. 1/3 of 872) may not have been sampled. Overall, 16% of the mark–recapture estimate of 6680 adults and jacks natural spawners were sampled by deadpitch crews. This rate was also enhanced by the low water conditions in November and December.

**Benefits to CWT Program and PSC Salmon Management:** Benefits to the CWT program and PSC Salmon Management include improved estimates of escapement to the Cowichan, improved escapement survey coverage, biosampling and head recovery rates, all of which providing increased certainty of CWT statistics.

**Success:** Overall this project was successful in improving escapement survey effort and coverage, biosampling rates, estimates of Chinook salmon mark rates, and recovery of Chinook salmon escapement to the Cowichan River.

**Project Title:** Improved Coded Wire Tag (CWT) Recovery, Nicola River Indicator Stock Program
**Project agency:** DFO
**Approved funding for this cycle:** $8,000
**Total CWTIT funding approved to date:** $32,000
**Objectives and Relationship to PSC Technical Report 25:** Issue 5 (Sampling rates in escapement)

**Project Description, Accomplishments, Results and Deliverables:** This project provided funding for contracting additional staff to expand recovery effort and sampling frequency during the Nicola River Chinook salmon deadpitch. By increasing the frequency at which the entire 50 km of river are surveyed, sampling rate was increased as carcasses are sampled prior to predator removal, thus increasing the sampling rate and precision of the mark–recapture estimates.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** It is difficult to quantitatively assess success to the annually variable rates of recovery resulting from different escapements of multiple species and annually variable environmental conditions. Sampling rates are dependent on the number of carcasses present, predators and other factors. Carcass sampling rates on the Nicola River tend to be hindered at escapements less than 10,000 due to the effects of predators. Until predator response is saturated, increasing recovery effort yields increased carcass recoveries by increasing the chances of encountering carcasses before predators, thus improving CWT recovery rates. The relationship is not linear so at any escapement level, the net benefit will differ, but proportional benefits are greater at depressed escapements.

**Project title:** Atnarko Chinook Coded Wire Tag (CWT) Indicator Program: Uncertainty in estimates of escapement and terminal CWT catch
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $110,000
**Total CWTIT funding approved to date:** $586,500
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issues 1, 4, 6, 10 (Representation of production regions, Low sample rates in terminal fisheries, Uncertainties in estimates of escapement or catch, Incomplete coverage of fisheries or escapement)

**Project Description, Accomplishments, Results and Deliverables:** This project began in 2009 with the objective to expand the Atnarko assessment program to a Central Coast Chinook salmon indicator (noted as lacking in Technical Report 25, no indicator stocks on the BC mainland between the Skeena and Fraser rivers). The only northern indicator, Kitsumkalum, is a stream-type stock; Atnarko is an ocean type stock. Annually the project included application of 250,000 incremental CWTs, sampling of the terminal commercial, sport, and First Nations fisheries, and reintroduction of a mark–recapture program to improve escapement estimates and CWT recoveries.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** The majority of CWTIT resources were used to generate an accurate and precise (mean CV = 9%) estimate of escapement with high CWT sampling rates (mean = 19%). The spawning escapement ranged from 6,000 to 27,000 adult Chinook salmon during 2009–2013. Terminal First Nation and commercial gillnet fisheries were sampled intensively, with respective mean sample rates of 86% and 45%. During the early years, CWTIT resources supported the estimation of the terminal sport fishery catch and CWT sampling; however, extremely large floods in 2010 and 2011 caused major changes to the river and fishery access points rendering the creel survey method impractical. Subsequently, indirect catch monitoring methods have been used to estimate CWT recoveries in the terminal sport fishery.

Results for 2009–2012 annual escapement and terminal fishery monitoring programs were reported in TCCHINOOK (14)-1 v.2. The 2013 escapement mark–recapture program was successfully implemented. 1113 Chinook salmon were tagged, 5146 carcasses examined, and 185 tags recovered, providing a preliminary escapement estimate of 27,292 adults (CV 8.8%). There were 728 CWTs observed in the spawning escapement. In 2013 there was a high level of program support and compliance within the First Nations terminal food, social, and ceremonial fishery. Favorable water levels resulted in greater effort and catch (2,824). Greater than 31% of the First Nations food, social, and ceremonial fishery was sampled and 213 CWTs recovered. The 2013 Bella Coola commercial gillnet fishery caught 4450 Chinook salmon; CWT results are still pending.

Without continued funding, ongoing maintenance of the terminal mark–recapture program to estimate spawning escapement, terminal fishery sampling and incremental CWT application will not be possible. Incremental CWTs applied from 2009 to 2013 are still in circulation and the full benefits of increased tagging may not be realized in terminal fisheries and escapement without maintaining the incremental sampling programs.

**Success:** This project has been successful in improving the sample rates and precision in the estimation of CWTs in escapement and terminal catch.

**Project title:** 2013 Central Coast Chinook Mark-Incidence and Catch Estimation Program
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $10,000
**Total CWTIT funding approved to date:** $27,500
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issue 10 (Uncertainty in catch estimates and CWT expansions)

**Project Description, Accomplishments, Results and Deliverables:** Historically mark rates from the Central BC sport fishery have not been available instead mark rates from other areas (global pooling) in DFO's Mark Recovery Program (MRP) have been substituted. The historical use of proxy mark rate and submission rate data in DFO's MRP to estimate Central BC sport fishery impacts has been problematic.

The objectives for this project included the following:

1. Obtain mark rate data for Central Coast sport fishery which is stratified both spatially and temporally from late June to late August when the majority of Chinook salmon are caught.
2. Develop independent catch estimates for Areas 7–9 by month using fisher boat launch trailer counts and creel survey data.
3. Determine the lodge underreporting bias for marked head submission by comparing logbook mark rates to those collected by DFO staff (Conservation and Protection officers).
4. Calculate submission rates for Central Coast sport fishery either through integration of data into MRP or independently.

Immediate benefits have been realized as a result of this program, including catch estimates for the previously unaccounted for independent angler (nonlodge based) component of the fishery, and data for calculation of Central BC (Area 7-10) submission rates as well as *estimated* expansion factors. The availability of these data has precluded the need to use mark rates from other areas (global pooling) in DFO's MRP.

**Benefits to CWT Program and PSC Salmon Management:** The observed submission rates during the past three years are higher than proxy data previously used in MRP, and corresponding expansion factors are believed to better represent Central BC sport fishing impacts on CWT stocks. This recreational fishery is a significant harvester of Chinook salmon (approx. 6,000 in 2012 and 2013). Appropriate expansion of CWT recoveries in MRP is required to produce consistent and reliable stock-specific fishery impacts.

Continuation of this project would not only provide reliable central coast submission rate data and *estimated* expansion factors in the future but would also yield insight into the variability of these data between years. Without an annual program to collect Central BC Chinook salmon mark rate and independent angler catch data, proxy data from other areas would once again be used in MRP to expand CWT recoveries. The deficiencies inherent with this method have been highlighted previously and were the primary reason for initiating this project in 2011.

Future program objectives include opportunity to reduce program cost and increase program efficiency as new methods for determining independent angler effort and CPUE information are developed. These could include the following:

1. Partner with the Wui'Kinuxv First Nations guardian program in Rivers Inlet to collect on water creel data.

2. Independent effort estimates may be determined solely via marina reservation records for Area 9.
3. Partner with local First Nations guardian programs to collect on water creel data, and additional land-based creel survey at Shearwater BC. Independent effort estimates in Areas 7 and 8 may be more efficiently collected with increased onground presence and interviews.

**Success:** Yes, based on improved catch estimates and stock- and fishery-specific impacts.

**Project title:** Lower Fraser Fisheries Alliance (LFFA) Coded Wire Tag (CWT) Recovery Improvements
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $25,000
**Total CWTIT funding approved to date:** $105,000
**Continued CWTIT Funding Needed:** No
**Objectives and Relationship to PSC Technical Report 25:** Issues 4 (Low sample rates in terminal fisheries), Issue 10 (Incomplete coverage of fisheries and escapement).

**Project Description, Accomplishments, Results and Deliverables:** The Lower Fraser Fisheries Alliance (LFFA) is an organization formed in March 2010 which has been empowered by its member First Nations from the mouth of the Fraser River to the Canyon (Lower Fraser Area; LFA) to establish a First Nation to First Nation (Tier 1) working relationship to address issues of common interest and work with the DFO toward resolutions for effective resource and fisheries management.

This project is a collaborative project between DFO and the LFFA to make improvements to CWT awareness and sampling in the LFA through the following activities:

1. Build understanding of the CWT program and the Salmon Head Recovery Program throughout the LFA by engaging First Nations leaders and communities.
2. Provide technical support to LFA First Nations monitoring organizations on the collection and provision of biological samples and high quality supporting data associated with the CWT program.
3. Develop a communication plan, identifying the audience, message, strategy, form, and timing of communication for First Nations in the LFA.
4. Develop communication presentations and products.
5. Provide communication, education and awareness sessions with LFA First Nations, targeted to First Nations Community leaders, fisheries managers, biologists and technical staff, and fishers.
6. Provide training in the collection of CWT biological samples and data to First Nations fishery monitoring programs to support and enhance existing First Nations fishery monitoring programs in the LFA.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** This is the third year of a collaborative project between the LFFA and LFA DFO targeting improvements to CWT sampling in the area addressing low sample rates in terminal fisheries. Both this project and the related project, *Operational Support for First Nations CWT Sampling*, benefit the CWT program by increasing awareness within LFA communities, aiding monitoring organizations to implement changes and build tools to support CWT sampling and data collection, and increasing the number of head samples collected from fisheries. Quantitative results are shown in Tables 1–4 in the related project.

**Project title:** Operational Support for First Nations Coded Wire Tag (CWT) Sampling Projects
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $25,000
**Total CWTIT funding approved to date:** $50,000
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issue 4 (Low sample rates in terminal fisheries), Issue 10 (Incomplete coverage of fisheries and escapement)

**Project Description, Accomplishments, Results and Deliverables:** This project provided funding for a seasonal technician to provide support to Lower Fraser Area (LFA) DFO and First Nations monitoring groups, targeting increased sampling of Chinook and coho salmon for CWTs and improving collection of supporting mark rate information. The objectives for this year's funding are as follows:

1. Continue to build the relationship between DFO and the Lower Fraser Fisheries Alliance (LFFA) around CWT sampling in First Nations fisheries.
2. Work with staff from the LFFA on initiatives to increase understanding of the importance of the CWT Program within the LFA First Nations communities and monitoring organizations.
3. Provide support to LFA DFO and First Nations in order to increase the number of head samples collected from LFA First Nations fisheries and work on improving the systems for collection and quality of data on mark rates from LFA First Nations monitoring programs.

**Qualitative and Quantitative (if appropriate for project) Benefits to CWT Program and PSC Salmon Management:** This is the third year of a collaborative project between the LFFA and LFA DFO targeting improvements to CWT sampling in the area addressing low sample rates in terminal fisheries, and it was the second year funding was provided for DFO technical support. Both this project and the related LFFA funding provided in 2011–2014 benefit the CWT program by increasing awareness within LFA communities, aiding monitoring organizations to implement changes and build tools to support CWT sampling and data collection, and increasing the number of head samples collected from fisheries.

As displayed in Tables 1-4 below, both the total number of samples collected and the temporal and spatial distribution of those samples continued to improve this season for Chinook salmon. In addition, DFO and First Nations staff on the fisheries observed an increased awareness of the program this season including multiple incidences of fishers having samples ready for collection by the sampler in advance of a prompt. Samples recovered from coho salmon fisheries continue to be challenging even though the departmental messaging about the importance of the program has been consistent to that of Chinook salmon.

**Table 1:** Summary of Chinook and coho salmon head submissions by area from Lower Fraser First Nations Food, Social and Ceremonial fisheries, 2010–2013.

| Area | Chinook | | | | Coho | | | |
|---|---|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2010 | 2011 | 2012 | 2013 |
| Below Port Mann | - | - | 2 | 11 | - | 2 | - | 1 |
| Port Mann to Mission | - | 1 | 2 | 11 | - | - | - | - |
| Mission to Harrison | - | 1 | 3 | *7* | - | 1 | 16 | - |
| Harrison to Hope | 7 | 8 | 5 | 5 | - | - | - | - |
| Hope to Sawmill | 1 | 6 | 10 | 11 | - | - | - | - |
| ***Total :*** | ***8*** | ***16*** | ***22*** | ***45*** | ***-*** | ***3*** | ***16*** | ***1*** |

**Table 2:** Summary of percentage of annual Chinook and coho salmon head submissions collected by area from Lower Fraser First Nations Food, Social and Ceremonial fisheries, 2010–2013.

| Area | Chinook | | | | Coho | | | |
|---|---|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2010 | 2011 | 2012 | 2013 |
| Below Port Mann | 0% | 0% | 9% | 24% | 0% | 67% | 0% | 100% |
| Port Mann to Mission | 0% | 6% | 9% | 24% | 0% | 0% | 0% | 0% |
| Mission to Harrison | 0% | 6% | 14% | ***16%*** | 0% | 33% | 100% | 0% |
| Harrison to Hope | 88% | 50% | 23% | 11% | 0% | 0% | 0% | 0% |
| Hope to Sawmill | 13% | 38% | 45% | 24% | 0% | 0% | 0% | 0% |
| ***Total :*** | ***100%*** | ***100%*** | ***100%*** | ***100%*** | ***0%*** | ***100%*** | ***100%*** | ***100%*** |

**Table 3:** Summary of Chinook and coho salmon head submissions by month from Lower Fraser First Nations Food, Social and Ceremonial fisheries, 2010–2013.

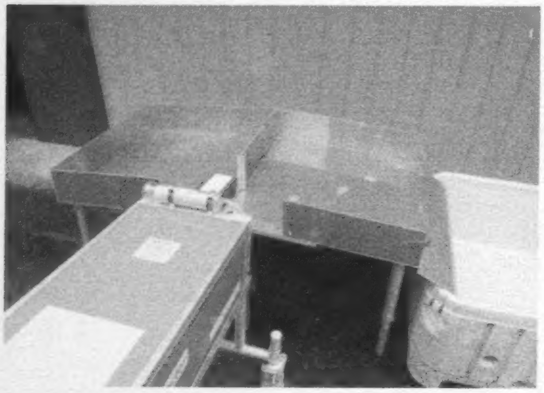
| Month | Chinook | | | | Coho | | | |
|---|---|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2010 | 2011 | 2012 | 2013 |
| April | - | - | - | - | - | - | - | - |
| May | - | - | - | - | - | - | - | - |
| June | 8 | 3 | 1 | 5 | - | - | - | - |
| July | - | 2 | 14 | 10 | - | - | - | - |
| August | - | 9 | 7 | 25 | - | 1 | - | - |
| September | - | 2 | - | 5 | - | - | - | - |
| October | - | - | - | - | - | 2 | 16 | 1 |
| ***Total :*** | ***8*** | ***16*** | ***22*** | ***45*** | ***-*** | ***3*** | ***16*** | ***1*** |

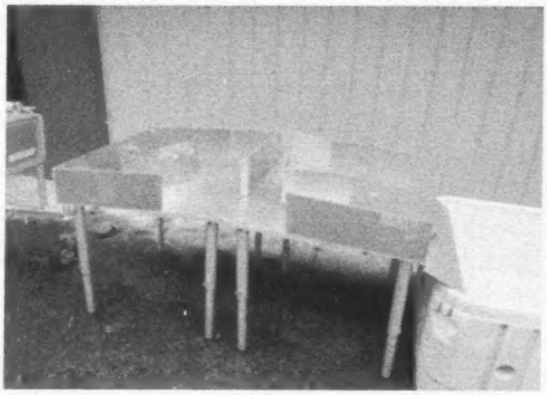
**Table 4:** Summary of percentage of annual Chinook and coho salmon head submissions collected by month from Lower Fraser First Nations Food, Social and Ceremonial fisheries, 2010–2013.

| Month | Chinook | | | | Coho | | | |
|---|---|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2010 | 2011 | 2012 | 2013 |
| April | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| May | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| June | 100% | 19% | 5% | 11% | 0% | 0% | 0% | 0% |
| July | 0% | 13% | 64% | 22% | 0% | 0% | 0% | 0% |
| August | 0% | 56% | 32% | 56% | 0% | 33% | 0% | 0% |
| September | 0% | 13% | 0% | 11% | 0% | 0% | 0% | 0% |
| October | 0% | 0% | 0% | 0% | 0% | 67% | 100% | 100% |
| Total : | 100% | 100% | 100% | 100% | 0% | 100% | 100% | 100% |

**Project title:** Custom Sampling Table – Ucluelet Fisheries Plant (West Coast Vancouver Island)
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $10,000
**Total CWTIT funding approved to date:** $10,000
**Continued CWTIT Funding Needed:** No
**Objectives and Relationship to PSC Technical Report 25:** Issues 7, 12 (Low sample rates in highly mixed stock fisheries, Sampling to facilitate mark selective fishery evaluations)

**Project Description, Accomplishments, Results and Deliverables:** This project involved the design and production of a set of custom CWT sampling tables to be integrated into a West Coast Vancouver Island Chinook salmon troll fishery offload location in Ucluelet, BC. In reviewing the offload procedures, the table design was developed collaboratively with the plant management to meet the requirements of the CWT sampling program to access 100% of the catch for each vessel, while respecting industry requirements for minimal footprint at the site, high throughput, and careful handling of the catch to maintain economic value.





**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Deployment of this new equipment has resulted in in long-term improvements to the sampling infrastructure at a primary West Coast Vancouver Island offload location and improvements in efficiency and reliability of CWT recoveries in the Canadian troll fishery catch monitoring program while reducing handling of fish. In addition, the custom tables were designed to allow the tables or plans to be re-engineered, with only minor modification, for other offload locations as may be required in the future.

**Project title:** Coded Wire Tag (CWT) T-wands
**Project agency:** Fisheries and Oceans Canada (DFO)
**Approved funding for this cycle:** $50,000
**Total CWTIT funding approved to date:** $50,000
**Continued CWTIT Funding Needed:** No
**Objectives and Relationship to PSC Technical Report 25:** Issues 7, 12 (Low sample rates in highly mixed stock fisheries, Sampling to facilitate mark selective fishery evaluations)

**Project Description, Accomplishments, Results and Deliverables:** This project involved the replacement of CWT hand-held detection equipment for commercial fisheries sampling programs with the new Northwest Marine Technology T-wand to increase Canada's ability to accurately and efficiently sample CWTs in highly mixed stock fisheries with mass-marked Chinook salmon present.

The funding supported the purchase of 18 T-wands, with DFO in-kind trade-in of 18 working old blue hand-held wands.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Deployment of this new equipment has resulted in improvements in efficiency and reliability of CWT recoveries in Canadian catch monitoring programs while reducing handling of fish, costs for processing and transportation.

**2013 US Project Reporting**

A total of 12 US projects were funded in FY 2013 (Table L2). The total expenditure of US CWTIT projects in 2012 was $1,500,000. Below the table are summaries for each individual project, including a description of the project, deliverable benefits to the CWT system, and the issue covered in PSC Technical Report 25 (PSC 2008).

*Appendix L 2. US CWT Project Expenditures for 2013–2014, approved in February, 2013.*

| Project Category | TR25 Issue | Project Title | Cost ($USD) |
|---|---|---|---|
| Replace outdated CWT equipment | 12, 13 | Replace WDFW Outdated Handheld CWT Wand Detectors [1] | $248,543 |
| Low sample rates in mixed stock fisheries | 7 | Sampling Washington Ocean Salmon Fisheries [1] | $354,492 |
| Low sample rates in mixed stock fisheries | 7 | SEAK Sport Catch Sampling [1] | $57,367 |
| Indicator hatchery stock tagging, terminal fishery and escapement numbers, and sampling | 1, 3, 4, 6 | Mid-Oregon Coast CWT Recovery, and Escapement of Elk River Fall Chinook [1] | $125,195 |
| Replace outdated CWT equipment | 13 | Purchase of Reading Stations at Alaska CWT Lab | $29,304 |
| Reduce head processing costs and improve sampling efficiency | 4, 7, 13 | SEAK Commercial Port Sampling of *No Tags* [1] | $58,164 |
| Replace outdated CWT equipment | 12, 13 | Replace 30 ODFW Outdated Handheld CWT Wand Detectors | $101,063 |
| Purchase new CWT equipment | 13, 14, 17, 18 | Purchase Data Loggers for 10 Hatcheries for Tag and Release Data Electronically and Train Staff | $99,653 |
| Administrative | 19 | Partial Funding for Co-Chair | $14,820 |
| Indicator stock tagging of wild stock without hatchery representation | 1, 2 | Chilkat River Chinook Smolt CWT [1] | $86,801 |
| Indicator stock tagging of wild stock without hatchery representation | 1, 2 | Stikine River Chinook Smolt CWT—Bilateral [1] | $134,562 |
| Low sample rates in mixed stock fisheries | 7, 8, 12 | Improvements to Oregon Ocean CWT Sampling in CR Management Area | $112,597 |
| CWT Lab equipment purchase and sampling | 7, 10, 13 | Purchase of T-Wands, Reading Station and Fishery Sampling—Makah Tribe | $46,459 |
| CWT Lab and sampling equipment purchase | 7, 13 | Purchase of T-Wands and Reading Station—Lummi Tribe | $12,607 |
| Administrative—CWT meeting costs | 19 | PSC—Fund Costs of Next 2 CWTIT Workshop | $13,200 |
| Purchase new CWT equipment | 7, 13 | Purchase of Dissection and Reading Stations—Stillaguamish Tribe | $5,173 |
| | | GRAND TOTAL | $1,500,000 |

[1] Multiyear projects.

**Project Title:** Coded Wire Tag (CWT) Field Equipment Replacement—Handheld Wands
**Project agency:** WDFW, John Kerwin
**Approved funding for this cycle:** $248,543
**Total CWTIT Funding approved to date:** $479,269
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issue 12 (Sampling methods to facilitate sampling of mark selective fisheries and CWT processing), Issue 13 (Timeliness of reporting)

**Project Description, Accomplishments, Results and Deliverables:** WDFW has approximately 500 CWT detection wands in current inventory. The WDFW sampling database lists approximately 240 sampling locations where Chinook and coho salmon are sampled for CWTs. Additionally, streams and rivers in every major river basin, as well as all WDFW hatchery facilities are surveyed annually for Chinook and coho salmon that contain CWTs. All of these locations require the necessary equipment to allow for adequate sampling of both marked and unmarked CWT-tagged fish. The purchase of 85 CWT detection wands represents the first influx of the new technology and significantly more sensitive wands for WDFW samplers to utilize.

During 2013, WDFW purchased 85 hand held wands of the new design developed by Northwest Marine Technology in 2011. These wands were utilized at port sampling locales that have high numbers of Chinook salmon sampled. Because there are unreliable CWT detection wands at other locations, WDFW will make an assessment of the CWT detection wands turned in by samplers at ports and other field sites, and use the most useful to replace the unreliable CWT detection wands. For example, some wands have been retrofitted with shields while others have not. WDFW will replace nonretrofitted wands with reliable retrofitted wands.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** There is increased accuracy of detecting CWTs in sampling using handheld wands. Some increase in speed and efficiency of sampling should be realized as well.

**Success:** Yes, the wands were purchased and will be used for the 2014 season for Washington fisheries.

**Project title**: Sampling Washington Ocean Salmon Fisheries
**Project agency:** Washington Department of Fish and Wildlife
**Approved funding for this cycle:** $354,492
**Total CWTIT funding approved to date:** $1,031,900
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Improving sample rates in mixed stock fisheries

**Project Description, Accomplishments, Results and Deliverables:** This project addresses the priority activity identified by the CWTIT for improving sampling rates in highly mixed stock fisheries (fisheries with multiple stocks). This project is an ongoing activity of the Washington Department of Fish and Wildlife that was supported by funding provided by the United States federal government (Anadromous Fish Grant – Public Law 304).

The ultimate use of these data is to determine harvest rates, stock composition and compliance with Pacific Salmon Treaty obligations for the United States, as well as to provide data used to forecast or estimate impacts of fisheries on various stocks. Fishery managers use these determinations to optimize the two goals of protecting weak stocks and providing recreational and commercial harvest opportunities.

Sampling rates in the 2013 Washington ocean recreational fishery remained well above the minimum 20% goal at 37% for Chinook and 39% for coho salmon. In the 2013 Washington non-Indian commercial troll fishery, rates of 45% on Chinook and 34% on coho salmon were maintained. The sampling encounter rate on CWT tagged fish increased notably in 2013; a total of 4,300 Chinook salmon CWTs and 4,600 coho salmon CWTs were recovered. Additionally, onboard and dockside Chinook salmon DNA samples totaled 2,600 in the recreational fishery and 1,850 (dockside only) in the non-Indian troll fishery.

Continued funding will be required to maintain current sampling levels. Without CWTIT funding, sampling rates are likely to fall below 20%.

**Project title**: SEAK Sport Catch Sampling
**Project agency:** Alaska Department of Fish and Game
**Approved funding for this cycle:** $57,367
**Total CWTIT funding approved to date:** $195,358
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Improving sample rates in mixed stock fisheries

**Project Description, Accomplishments, Results and Deliverables:** This project addresses the priority activity identified by the CWTIT for improving sampling rates in mixed stock fisheries (fisheries with multiple stocks). This Southeast Alaska (SEAK) regional project is an ongoing activity of the Alaska Department of Fish and Game, Division of Sport Fisheries, which was also supported by funding from federal funds (Dingle-Johnson) and other PSC funds, and this CWTIT money helps cover additional sampling.

This catch sampling data for the SEAK sport fisheries of Chinook and coho salmon is used to determine stock composition of the harvest, and compliance with Pacific Salmon Treaty obligations. The CWT recoveries provide important temporal and spatial information to fishery managers, help with estimating harvest rates by the various fisheries (including the sport fishery), and ultimately help with the sustained management of these important salmon resources.

The objectives of this project were to improve the sampling rates of sport harvested Chinook salmon in Juneau and Ketchikan, and to maintain the 20% sampling rate of Chinook salmon in Craig. Preliminary estimates indicate that unfortunately the sampling rates in 2013 were still low in Juneau (13.0%) and Ketchikan (10.4%) for 2013. Efforts and considerations to improve these sampling rates are ongoing. In 2013 we did maintain the 20% or above sampling rate for Chinook salmon at Craig (21.7%).

Revised preliminary sampling rates in the 2013 SEAK marine recreational fishery for the region was slightly below the minimum 20% goal at 18.2% for Chinook salmon and 19.6% for coho. A total of 9,798 Chinook and 61,073 coho salmon were examined for CWTs, with 651 Chinook and 994 coho salmon CWT being recovered. The 2013 sport fish SEAK CWT recovery information can be downloaded from the ADF&G Mark and Age Determination website. Additionally, a total of 4,204 Chinook salmon were sampled for genetic tissue from the SEAK marine recreational fishery.

Continued funding will be required to help work towards improving and maintaining target sampling levels.

**Project Title:** Mid-Oregon Coastal Production Region Coded Wire Tagging, Recovery and Escapement Estimation of Elk River Fall Chinook Salmon
**Project agency:** Oregon Department of Fish and Wildlife
**Approved funding for this cycle:** $125,195
**Total CWTIT funding approved to date:** $501,379
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issue 1 (Inconsistent and incomplete representation of production regions by CWT indicator stocks)

**Project Description, Accomplishments, Results and Deliverables:** The Oregon Department of Fish and Wildlife is evaluating the appropriateness and feasibility of using the Elk River hatchery production of fall Chinook salmon as an exploitation rate indicator stock for the Mid-Oregon Coast aggregate. Due to funding shortfalls, this aggregate has been underrepresented in the PST CWT program for fisheries management. There is currently only one other exploitation rate indicator stock on the Oregon coast; it is located in the North Oregon Coast aggregate. Over the last three years with CWTIT program support, we have boosted the number of ad-clipped and CWT smolts released from Elk River Hatchery to over 200,000. This level of tagging should be attainable with this year's project as well. Brood stock collection has just begun on the Elk River for 2013.

In addition to tagging, with CWTIT program funding we have implemented a complete terminal tag recovery program consisting of terminal fishery evaluation, spawning ground surveys, and hatchery intake sampling. Our efforts for 2013 are just getting underway. During the previous three years, we were able to generate precise and accurate estimates of terminal catch, enumerate and sample hatchery swim-ins, and estimate hatchery and wild spawning escapement. These data will be used in combination with future return and harvest data to evaluate the utility of the Elk River hatchery stock as an exploitation rate indicator Stock.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Increased and consistent tagging levels result in more CWT recoveries and subsequent higher levels of precision in all fishery and escapement strata evaluated through PSC management. Appropriate levels of staffing for terminal tag recoveries result in more accurate and precise estimates in all terminal strata. This will provide us the data to evaluate the utility of the Elk River hatchery stock to represent the Mid-Oregon Coast aggregate.

Through the first three years of funding we purchased new NMT CWT detection wands and data loggers with UPC scanning capabilities. The data loggers have improved the efficiency and accuracy of data collection through the use of programmed dropdown menus and scripts to limit and to field check data entry. Data are regularly uploaded to central servers. There, the data can be reviewed by project staff for accuracy and to highlight any possible protocol issues. We estimate approximately 120 person* hours annually are saved through this process. The Elk River stock is a late returning stock with fish spawning through February. Therefore, a timely turnaround of data is crucial to incorporating these data and estimates into local and international fisheries management.

**Project title:** ADF&G Mark, Tag, and Age Lab Coded Wire Tag (CWT) Reading Station Upgrades
**Project agency:** Alaska Department of Fish and Game
**Approved funding for this cycle:** $29,304
**Total CWTIT funding approved to date:** $29,304
**Continued CWTIT Funding Needed:** No
**Objectives and Relationship to PSC Technical Report 25:** Equipment purchases to improve CWT data collection, accuracy, and timeliness

**Project Description, Accomplishments, Results and Deliverables:** The CWT reading stations at the Alaska Department of Fish and Game's Mark Tag and Age Laboratory were based on obsolete 30-year old closed-circuit television technologies and need to be replaced. If a workstation broke, it could not be repaired or replaced because the parts are out of date and unavailable. The loss of a single closed-circuit television reading station would translate to a significant loss in reader productivity (e.g., fewer CWT reads per day). Consequently, all reading stations needed to be upgraded before this issue became problematic.

We replaced eight CWT reading stations with a digital imaging system that consists of a dissecting microscope equipped with a digital video camera and a hi-resolution LCD monitor for viewing and reading CWTs. Four of the systems have 8" monitors and four have 10" monitors. The digital imaging systems were purchased, installed, and integrated into Mark Tag and Age Laboratory operations in early October.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Reading CWT tag codes directly from a high-resolution monitor is easier, more accurate, and more efficient than reading them through a low-resolution TV monitor. Unlike closed-circuit television, LCD displays do not have screen flicker which reduces eyestrain and fatigue and ultimately increases reader productivity and data quality. Unlike our previous reading stations, output from the digital imaging system can be sent directly to the lab's networked computers so that we can capture, store and send images of CWT codes. This added capability helps us confirm codes on CWTs prior to release, read difficult CWT recoveries, and verify previously read codes—all of which contribute significantly to the generation of quality data.

Recovery and identification of CWT codes is part of Alaska's obligation to treaties and agreements made as participating members of the PSC. These data play a key role in satisfying domestic agreements and international treaties, specifically with regards to the US–Canada Salmon Treaty obligations involving resource allocation and management of transboundary stocks. The Mark Tag and Age Laboratory serves as Alaska's centralized resource for tracking and managing salmon resources using CWTs and is therefore an integral part of the coordinated coastwide CWT program regulated and monitored by the PSC.

**Project title:** SEAK Commercial Port Sampling No Tags
**Project agency:** Alaska Department of Fish and Game
**Approved funding for this cycle:** $58,164
**Total CWTIT funding approved to date:** $304,616
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issue 7 (CWT Tagging and Sampling Issues)

**Project Description, Accomplishments, Results and Deliverables:** Southeast Alaska has relied on visual sampling of adipose clipped fish to recover CWTs for over three decades and has provided high-quality data for regional and PSC analytical and management purposes. However, since 1995, an increasing percentage of adipose clipped Chinook salmon without tags (No Tags) have been recovered in the Southeast Alaska Troll fisheries. The escalating presence of No Tags in Southeast Alaska fisheries has led to a decrease in CWT sample rates by statistical week and area. The effects of No Tags also include an increase in sampling time, shipping costs, tag detection/decoding time, and loss of revenue to seafood processors and direct marketers.

In an effort to increase or maintain CWT sample rates and decrease shipping costs, this project provided funding for four Fish and Wildlife Technicians in the ports of Sitka, Craig, and Wrangell and one Fishery Biologist in the port of Sitka.

During the summer troll fishery in 2013 Alaska Department of Fish and Game commercial port samplers examined over 30,000 Chinook salmon for the presence or absence of the adipose fin. Port samplers used NMT T-wands to check for the presence of a CWT in those fish observed as having a missing adipose fin. Port samplers applied standard CWT sampling protocol to those fish missing an adipose fin that signaled positively as having a CWT implanted in the head and recovered the heads of these fish from seafood processors. Over 5,000 Chinook salmon harvested in the Southeast Alaska summer troll fishery were observed to be missing their adipose fin, and 1,817 of those positively signaled as having a CWT. Sampling rates for each of the four troll fishery quadrants in Southeast Alaska increased in the Southern Outside and remained above the coastwide standard of 20% in the Southern Inside, Northern Inside, and Northern Outside.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Benefits to the CWT program include the increased sampling rate in the Southern Outside quadrant of the Southeast Alaska. Sampling rates in other areas of the 2013 Southeast Alaska summer troll fishery were maintained above the 20% coastwide standard. This increases the precision in the estimation of exploitation rates in the various fishery strata and other statistics needed for PSC management. The use of the electronic tag detection wand benefits the CWT Program as less salmon heads were recovered, bagged, and shipped to the ADF&G Mark, Tag, and Age Laboratory. This also benefits the industry as more fish were available for the *head-on* market and therefore mitigated the loss of revenue to seafood processors and buyers.

**Project title:** Replace Outdated Handheld Coded Wire Tag (CWT) Wand Detectors – 30 Wands
**Project agency:** Oregon Department of Fish and Wildlife
**Approved funding for this cycle:** $101,063
**Total CWTIT funding approved to date:** $181,773
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issue 12 (Sampling methods to facilitate sampling of mark selective fisheries and CWT processing), Issue 13 (Timeliness of reporting)

**Project Description, Accomplishments, Results and Deliverables:** With the approved 2013 funding, ODFW purchased a second lot of 30 new T-wands. The first 10 T-wands of the 2013 order were just delivered on November 8. The remaining 20 T-wands will be delivered in two lots before the end of December, 2013. The late delivery resulted from a large backlog of other T-wand orders received by Norhtwest Marine Technology this year. This did not prove to be a serious setback because the first 30 T-wands delivered in late 2012 were available for sampling Oregon's key ocean and Columbia River commercial and sport fisheries in the spring and summer months of 2013.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** The significantly higher sensitivity of the T-wands (depth approx. 5+ cm vs the old blue wands at approx. 3 cm) will result in higher numbers of CWTs being detected in all fisheries, escapement back to the hatcheries, and spawning grounds. This will be particularly true for the larger adult Chinook salmon sampled in the fisheries and elsewhere. T-wands also eliminate any further need to *mouth wand* adult Chinook salmon.

The new design of the T-wands allows samplers to grasp the wand just below the *T* part of the wand. This results in balanced movement of the T-wand and basically eliminates the continuous wrist movement and associated stress injuries experienced with the old blue wands.

**Project title:** ODFW Coded Wire Tag (CWT) Database Program Support Systems
**Project agency:** ODFW, Mark Engelking
**Approved funding for this cycle:** $99,653
**Total CWTIT Funding approved to date:** $520,653 on ODFW CWT Reporting System
**Continued CWTIT Funding Needed:** Yes for training and added functionality of the system
**Objectives and Relationship to PSC Technical Report 25:** Issue 13 (Timeliness of reporting), Issue 14 (Incomplete/no exchange of CWT data), Issue 17 (Updating data is difficult and updates cannot be tracked), Issue 18 (Validation is inadequate).

**Project Description, Accomplishments, Results and Deliverables:** There are several aspects to the project. The Agile Software Development process of adaptive and interactive software development was successfully used in the development of the CWT F application. The conversion of existing CWT data, reports, and processes for ocean fisheries to newer web-based technology (SQL c#.net) used by the CWT F application has been completed. This conversion improves management of CWT data and reporting of recoveries. Migration of historic ocean fisheries, Marine Resources Program, information from the COBOL Mark–Recovery application to the CWT F application is being validated for accuracy. The CWT F application will be used exclusively in 2014. ODFW defined 85 development stories for transforming Ocean Recreational Boat Survey data from PC computer-based processes to web-based technology. The ocean troll (commercial) fisheries processes now are linked to the commercial fish ticket application. This allows total salmon catch and sample estimations in the commercial ocean fishery. Relevant reports are available and others are in development to manage the ocean fisheries. These reports to support the ocean fisheries programs are available for management in 2014.

Upload processes for Washington Columbia Treaty fisheries data have been developed and tested. These processes will be used in 2014 for recovery and effort data management of Washington information in the Columbia River commercial and sport fisheries reported by Oregon.

CWT recovery information through paper forms and the manual data entry processes for CWT recovery and release information from hatcheries are to be replaced in 2014 by programmed data loggers and netbooks, which will provide electronic data uploads to the CWT F application database. To this end equipment has been purchased and software has been developed. A programmed Psion data logger is used to capture CWT recovery data from several hatcheries (including Bonneville Hatchery) and upload it to the CWT F application. Preliminary testing indicated a better alternative to the data loggers at some other hatcheries was rugged netbooks (small portable laptop computers) using Excel spreadsheets to capture data. Parallel testing of the netbooks at Salmon River and Sandy River hatcheries is in progress. It appears that netbooks have the advantage of requiring little training and upload processes are available in CWT F for this data. Development for CWT release programs is ongoing. The Psion data loggers that are both durable in field conditions and compatible with Microsoft Mobile 6 software are also in use at Columbia River Management. All snout identification tickets now have 128-code bar codes which code for alphanumeric characters; this allows direct reading of the tickets through the integrated bar code scanner on the data loggers. They are in parallel test and when accepted and approved will be used for next year's data acquisition.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Timeliness of reporting, access and retrieval of CWT data, updating of CWT data is simplified, and validation and accuracy of CWT data from Oregon is improved by the CWT F. It will be fully implemented in 2014. Updates to the CWT F application from Regional Mark Information Centre data is now a one step process. Creation of export files of release, recovery, location and catch sample data is a one-step process reducing errors from file manipulation and corruption of data. Data description files are created in conjunction with the data files.

**Success:** Yes, the project is mostly complete. Additional functionality and training are required to improve access to analysts in ODFW and inclusiveness of other applications (Fish Tickets, Hatchery Management Information System, Research, and Willamette BiOP projects). Continued data grooming, report development and bug fixing (as needed) will be necessary to upgrade performance of the system.

**Project title:** Chilkat River Chinook salmon fall Coded Wire Tag (CWT) project
**Project agency:** The Alaska Department of Fish and Game
**Approved funding for this cycle:** $86,801
**Total CWTIT funding approved to date:** $275,635
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issue 1, 2 (Tagging and tagging levels)

**Project Description, Accomplishments, Results and Deliverables:** The Chilkat River is the third or fourth largest producer of Chinook salmon in Southeast Alaska. The Chilkat River Chinook salmon fall CWT project has been conducted since 2000. The same Chinook salmon brood year is also captured and implanted with CWTs the following spring. Conducting fall CWT projects significantly boosts the number of Chinook salmon implanted with CWTs that emigrate from the Chilkat River the following spring. Trapping areas in the Chilkat River drainage include the Tahini River, Kelsall River, and lower Chilkat River; trapping commences in mid-September and finishes in late October every year. Data produced from this project contributes towards estimating fall parr abundance, overwinter survival, smolt abundance, and marine harvest in mixed stock fisheries. The tagging goal of 22,000 has been reached in 11 of 13 years since 2000, and the fall mark fraction average for brood years 1999–2005 is 0.068.

For brood years 1999–2011, the number of Chilkat River Chinook salmon parr released with CWTs in the fall has averaged 28,332 compared to an average of 4,068 released in the spring. Average fall parr abundance for brood years 1999–2005 is 496,344 (SE=72,183), average overwinter survival is 34.3% (SE=8.5%), and average smolt emigration is 161,857 (SE=40,071). The average tagging fraction for brood years 1999–2005, represented by theta, is 0.096, and fall tagging accounts for 71% of this mark fraction.

Tags released in the fall contribute towards estimation of marine harvest, total return, marine exploitation rates and smolt to adult survival. Marine harvest for brood years 1999–2005 has averaged 844 (SE=324), total return average is 4,707 (SE=656), average marine exploitation is 17.6% (SE=4.1%), and marine survival has averaged 3.2% (SE=0.8%).

Data from the fall Chilkat River Chinook salmon CWT project contributes toward brood year production estimates, which is produced following the 7-year life cycle (through age-1.5 fish) of Chilkat Chinook salmon. These data are published through the ADF&G Fishery Data Series and are readily available to fishery managers throughout Alaska, British Columbia, and the Pacific Northwest.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Because the fall CWT project produces the majority of Chinook salmon with CWTs leaving the Chilkat River annually, operation of this project is essential to accurately estimate important parameters which aids fishery management. Chilkat River Chinook salmon is a PSC indicator stock and contributes towards management of the Southeast Alaska sport fishery allocation in accordance with the Pacific Salmon Treaty.

Benefits to the CWT program include increased CWT recoveries in mixed stock fisheries and full run reconstruction for the Chilkat River Chinook salmon indicator stock. CWTs implanted during the fall project greatly increases the precision in the estimation of exploitation rates in commercial, sport, and subsistence fisheries, and produces other statistics needed for PSC management.

**Project Title:** Stikine River Chinook Smolt Coded Wire Tag (CWT)
**Project agency:** ADF&G (note this project is also funded by Canada), Phillip Richards
**Approved funding for this cycle:** $134,562
**Total CWTIT Funding approved to date:** $491,527
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** Issue 1 (Incomplete representation of production regions), Issue 2 (Determination of tagging levels)

**Project Description, Accomplishments, Results and Deliverables:** This bilateral project was designed to represent the Stikine River population of Chinook salmon, which averages run sizes of about 50,000 adults, and to increase the level of CWT tagging of smolts to 35,000 or more annually. In addition, approximately 2% were measured for weight and length. The tagging goal has been reached each year. Returning adults are sampled in marine fisheries, with most CWTs recovered in SEAK sport, gillnet and troll fisheries near Petersburg; fewer numbers are recovered in other areas of SEAK and NBC. The escapement and inriver fisheries are sampled to determine the marked rate by brood year, which provides a basis to estimate harvest contributions, exploitation rates, smolt and adult abundance, and survival rates. The US has paid the bulk of funding for the CWT portion of this program since its inception. Canada has paid for the bulk of escapement recoveries since its inception.

**Continued CWTIT Funding Needed:** Yes. Tagging rates could not have been achieved without this funding source.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** This program, along with the inriver run and escapement estimation program (funded by other sources) provides the tools to forecast and manage the terminal run of this stock per Chapter 1 of the 2009 Pacific Salmon Treaty Agreement.

**Success:** Yes; and additional data will be available when recently tagged broods recruit to fisheries in the future.

**Project Title:** Improvements to Oregon Ocean Coded Wire Tag (CWT) Sampling of Commercial Troll and Recreational Fisheries in the Columbia River Ocean Salmon Management Area
**Project agency:** Oregon Department of Fish and Wildlife, Eric Schindler
**Approved funding for this cycle:** $112, 597
**Total CWTIT Funding approved to date:** $313,834
**Continued CWTIT Funding Needed:** Yes, and other funding preferred
**Objectives and Relationship to PSC Technical Report 25:** Issue 7 (Low sampling rates in highly mixed stock fisheries), Issue 8 (Uncertainty in estimates of catch in high mixed stock fisheries), Issue 12 (Sampling methods to facilitate sampling of mark selective fisheries and CWT processing)

**Project Description, Accomplishments, Results and Deliverables:** The primary objectives of this project (initially begun with the 2011 ocean salmon fishing seasons) have been to implement full electronic sampling for CWTs, and to maintain the minimum required CWT sampling rate of 20% with emphasis on Chinook salmon in Oregon's ocean salmon fishery in the Columbia River Ocean Salmon Management Area. Implementation of this required a uniform approach for the entire Oregon ocean salmon fishery.

The objectives have been met and the project has been a success to date, although overall catches during the period have remained below historic levels and some challenges to maintaining sampling rates in the commercial salmon fishery have yet to be faced. In the 2013 ocean commercial troll salmon fishery, we recovered readable tags from 332 unmarked Chinook salmon (25 from the Columbia River Area), and these tags would not have been recovered without the support from CWTIT. An unexpected benefit has been the recovery of tags from unmarked Chinook salmon that were supposed to have been marked (missed clips or regenerated adipose fins may be the cause). Based on the tag recoveries from California stocks these unclipped recoveries of Chinook salmon made up approximately 1% of the total recoveries.

Tag recoveries from PSC stocks accounted for 44% (troll) and 61% (sport) of the CWT estimated hatchery stock contribution in the Columbia River Management Area in 2013, while only 17% (troll) and 11% (sport) of the estimated contribution from the fisheries South of Cape Falcon were from PST managed stocks. Nonclipped CWT Chinook salmon made up a decreasing percent of the CWTs recovered to the South, but still made up approximately 4% of the CWT recoveries south of Cape Falcon.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Coastwide, the implementation of full electronic sampling increased the recovery of CWTs by approximately 5% as a result of the recovery of nonclipped CWT Chinook salmon. Furthermore, tag recoveries from nonclipped CWT Chinook salmon in the Columbia River Area accounted for 17% of the total recoveries from the area. These recoveries were composed primarily of stocks from the Snake River and Central and Upper Columbia River. Without full electronic sampling, these recoveries would have been missed.

**Success:** Continued employment of full electronic sampling was successful in 2013 and sampling rates were maintained above the 20% objective coastwide. Seasonwide Chinook salmon sampling rates in the Columbia River Management Area were 41% for the commercial troll fishery and 42% for the recreational fisheries. South of Cape Falcon, Chinook salmon sampling rates were 27% for the commercial fisheries and 34% for the recreational fisheries.

**Project title:** Staff Support and Purchase of Equipment for Coded Wire Tag (CWT) Lab
**Project agency: Makah Tribe**
**Approved funding for this cycle:** $46,459
**Total CWTIT funding approved to date:** $51,771
**Continued CWTIT Funding Needed:** Yes
**Objectives and Relationship to PSC Technical Report 25:** 7.1.3. Sampling Issues for Highly Mixed-Stock Fisheries

**Project Description, Accomplishments, Results and Deliverables:** This project involved acquisition of hardware for the tag lab, and for sampling. In addition, it provided funding for additional staff to increase sampling rates.

The hardware purchased includes the following items:

1. Stand to stabilize the video microscope acquired in 2012 and used in reading tags.
2. T-wand to improve scanning fish for tags.
3. Pneumatic head-corer to speed up the process of extracting tags from heads.
4. Air compressor to power the head-corer.
5. Fume hood for ventilation in the tag lab.

Items 1 and 2 have been purchased and are in service in the CWT sampling program now.

Items 3 and 5 have been ordered and paid for, but we are awaiting delivery.

Item 4 has been purchased and delivered, but cannot be put into service until Item 3 is delivered and installed.

Staff support included hiring an assistant sampler during the summer salmon fishing season, and funding for additional pay for the port sampler.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Benefits already realized for the CWT program include increased sampling rates for both coho and Chinook salmon, compared with the rates in 2012, when the sampler did not have an assistant. Sampling rates for Chinook salmon increased from 33% in 2012 to 36% in 2013. For coho salmon, the sampling rates increased more dramatically, from 18% in 2012 to 32% in 2013. These increased sampling rates improve the precision in the estimation of exploitation rates in the Makah Tribe's fisheries. They will also provide Makah fishery management staff and other agency staff with more information on the stock composition of Makah Tribe's mixed stock fisheries. Finally, it will provide additional information used in cohort reconstruction and other stock assessment work.

Benefits expected from the hardware acquisition include more efficient processing of head in the tag lab, and more efficient reading of the tag codes. The latter benefit has already been partially realized by the purchase and operation of the video microscope in 2012, but we expect it to be further improved by the stand that will stabilize the microscope and the image of the tag on the video screen.

**Project title:** Lummi Coded Wire Tag (CWT) Equipment Acquisition
**Project agency:** Lummi Natural Resources Department
**Approved funding for this cycle:** $12,606
**Total CWTIT funding approved to date:** $12,606
**Continued CWTIT Funding Needed:** No
**Objectives and Relationship to PSC Technical Report 25:** Issues 13, 14, 15 (Timeliness of reporting, data exchange, interagency coordination)

**Project Description, Accomplishments, Results and Deliverables:** Lummi Natural Resources (LNR) aimed to build upon its previous capacity for the detection, collection, reading and reporting of CWTs taken from Chinook and coho salmon fisheries in Lummi's terminal fishing area. Funding received as part of this proposal has been used to acquire essential equipment and supplies for CWT sampling and processing, allowing for reliable CWT recovery data to be made available to the coast wide CWT program in a timely manner.

The harvest management division of LNR has utilized CWTIT funds to improve its salmonid harvest sampling program in an effort which has contributed reliable CWT recovery data to be used in the management of salmon stocks within Lummi's usual and accustomed fishing grounds. Lummi is the prominent fishing tribe participating in the mixed stock fisheries of Salmon Management Areas 7 and 7A, highlighting the need for enhancing the department's capacity for CWT sampling. As such, LNR requested and received funding for equipment upgrades and acquisitions. Specifically, LNR purchased two T-wands, one CWT jig, one CWT illuminator, and one video microscope. Such investments in equipment and supplies have helped ensure LNR's comanaging participation in sampling salmon harvests from area 7 and 7A fisheries for 2013 and beyond.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** Benefits to the CWT program include increased CWT recoveries in Regional Mark Information Centre region Northern Washington, increased turnaround time in reading and reporting tag results, and more involvement for the tribal comanagers in managing salmon fisheries.

**Project title:** Purchase of detection and reading station—Stillaguamish Tribe
**Project agency:** Lummi Natural Resources Department
**Approved funding for this cycle:** $5,173
**Total CWTIT funding approved to date:** $5,173
**Continued CWTIT Funding Needed:** No
**Objectives and Relationship to PSC Technical Report 25:** Issues 7 (Low sample rates in highly mixed stock fisheries), Issue 13 (Timeliness of reporting)

**Project Description, Accomplishments, Results and Deliverables:** The Stillaguamish Tribe annually samples spawning grounds and fisheries within the Stillaguamish Watershed for Chinook and coho salmon CWTs. All told, more than 30 miles of Chinook salmon habitat and 10 miles of coho salmon habitat are sampled during the spawning season, along with several inriver fishery locations. Heads are collected at these locations and brought back to our office and frozen. At the end of the fishing and spawning seasons we dissect out the CWTs and read them in our new laboratory, which is in the process of being outfitted. The proper equipment is needed to adequately and accurately carry out CWT dissection, and our lab needed a V-reader to help with the process.

Therefore, the Tribe purchased a new V-reader from Northwest Marine Technology. It replaced an older wand that was no longer working well for CWT dissection purposes.

**Qualitative and Quantitative Benefits to CWT Program and PSC Salmon Management:** The new V-reader will increase speed and efficiency of dissecting CWTS, and improve detection rates (more sensitive than old wand it is replacing).

**Success:** Yes, the V-reader was purchased and was used for the 2014 season in the Stillaguamish.